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An Index to the Fifty-ninth Volume of THE RAILWAY GAZETTE, covering the issues from July 7 to December 29, 1933, is presented as a Supplement to each copy of this week's issue.

## Future Prospects

In this, our first issue of the New Year, we publish as usual the annual messages of the chief officers of the railways of Great Britain. Although their tone is optimistic, and we believe justifiably so in view of the recent upward trend from the trough of depression, there can be no feeling of really buoyant hope until there is a prospect of that rapid rate of progression which would be justified by the progress of science and engineering. During the past few years enormous strides have been made in the overall efficiency of industry, the railways in particular. There was never a greater output of service with a smaller expenditure of energy than there is to-day, and never a greater reserve of unused energy still available. As witness to this, it is only necessary to contemplate the potential capacity of our locomotive, rolling stock, electrical and general engineering manufacturers. At the same time, potential demand is greater than ever. People desire to travel, to consume goods and services of all sorts, to enjoy life, quite as keenly as they have ever done. Until we see a definite facing up to the solution of this problem of liquidating the abundance at present frozen we cannot feel really optimistic of the long run. Still less can we entertain high hopes at a time when serious proposals are afoot for the reduction of productive capacity to actual, as distinct from potential, demand. If such proposals are carried into effect, real wealth will be reduced at the very time when it is most urgently wanted. May 1934 give our

leaders longer sight, and courage to face and tackle the greatest problem of the age.

## Railway Shareholders' Prospects

In our issue of December 1 last we advised railway shareholders not to be too optimistic as to the forthcoming dividend announcements next month. Sir James Milne in his New Year message to the Great Western Railway staff gives a similar warning with regard to his own company. Gross receipts from all sources for the full year 1933 are, he considers, not likely to exceed those of 1932, partly because of an estimated decrease of about £30,000 in dock receipts. So far as expenditure is concerned, there is, in his opinion, no justification for the optimistic estimates which have appeared in the press during recent months of the further savings effected by the railway companies during the past half-year. Additional traffic must entail increased operating expenses, and as the comparison is being made with a period in which very large savings were secured, further large reductions in expenditure cannot reasonably be anticipated. Summer tickets and an exceptionally fine summer resulted in a slight increase in passenger train receipts as from May 1, but the greater number of passengers carried involved the running of more train mileage and the use of additional rolling stock. Similarly, the increase in merchandise traffic meant that extra staff had to be employed in handling it, and in making good the increased wear and tear of rolling stock and permanent way.

## The Week's Traffics

British railway traffics for the past week virtually complete the totals for the year and provide a striking contrast with the position at the end of 1932. As recorded at the end of that year, traffics of the four group companies were down £13,697,000, whereas at the end of 1933 the net decrease is only £109,000. In merchandise receipts of the four companies there is a net increase of £572,500, in passenger train takings there is a net improvement of £332,000, whereas in coal class earnings there is a decrease of £1,013,500.

### 52nd Week

	Pass. &c.	Goods, &c.	Coal, &c.	Total.	Year to date	Inc. or dec. %
G.W.R.	+ 2,000	+ 14,000	+ 10,000	+ 26,000	+ 87,000	+ 0.36
L.M.S.R.	+ 4,000	+ 42,000	+ 41,000	+ 79,000	+ 310,000	+ 0.53
L.N.E.R.	+ 2,000	+ 28,000	+ 26,000	+ 56,000	+ 3,000	+ 0.007
S.R.	+ 1,000	+ 2,500	+ 4,500	+ 8,000	+ 111,000	+ 0.57

The Mersey's aggregate decrease for the year is now reduced to £1,442. For its first half-year the L.P.T.B. shows a total of £12,868,200.

## The Last G.W.R. Bus Service

As briefly recorded in our news columns, the last bus service to be operated by the G.W.R.—the G.W.R. & S.R. joint service from Weymouth to Wyke Regis and Radipole—was taken over on Monday by the Southern National Omnibus Co. Ltd. The G.W.R. was one of the earliest operators in Great Britain of time-tabled motor services, and its first route, between Helston and the Lizard, a distance of 11½ miles, was inaugurated on August 17, 1903. The reason for opening a service in this remote part of Cornwall was that local interests desired a light railway, but the G.W.R. was unwilling to incur the expense without first testing the traffic potentialities of the route. It was decided, therefore, to work an experimental motor bus service and some second-hand Milnes-Daimler vehicles were bought for the purpose from Sir George Newnes, who had been working them for a short time between Ilfracombe and Blackmoor, but they had failed to find favour in a part of the country famous for its coaching and horse interests. Although the Helston service did not

prove a paying proposition in its early days, results were sufficiently encouraging to justify the opening of another route, between Penzance and Marazion, on October 31, 1903. In the next year 30 Milnes-Daimler vehicles were ordered and thereafter many services were instituted in various parts of the G.W.R. area. Although such services were always operated as feeders to the trains, the term "feeder" was interpreted very widely, probably more so than with any other British railway company. At the beginning of 1929 the G.W.R. operated 300 motor buses on 168 services, but since that time these have been gradually turned over to associated omnibus companies.

### Overseas Railway Traffics

The latest Argentine railway traffic returns complete the figures of gross receipts for the first half of the financial year, and show that the only one of the four large British-owned railways to record an increase is the Buenos Ayres Great Southern, which has an improvement of £196,000 for that period. As will be seen from the accompanying table the figures for all four companies for the past week have been in a downward direction. Traffics of the Argentine North Eastern and Entre Rios Railways have, on the other hand, been showing an improving tendency of late and the decrease for the half-year on the Argentine North Eastern has been reduced to £38,200 and on the Entre Rios to £29,700. The full year's receipts of the Great Western of Brazil and the Leopoldina Railways show nominal decreases in sterling of £43,200 and £303,473, respectively.

Railway.	No. of Week.	Weekly Traffics.	Increase or Decrease.	Aggregate Traffic.	Increase or Decrease.
Buenos Ayres & Pacific ..	26th	105,000	- 15,000	2,416,000	- 160,000
Buenos Ayres Great Southern ..	26th	230,000	- 25,000	4,630,000	+ 196,000
Buenos Ayres Western ..	26th	65,000	- 5,000	1,569,000	- 56,000
Central Argentine ..	26th	175,000	- 23,000	4,048,000	- 796,000
Canadian Pacific ..	50th	455,400	+ 7,000	22,269,800	- 1,962,400
Bombay, Baroda & Central India	38th	159,300	- 900	5,486,475	+ 150,050

**Welsh Highland Light Railway** The proposed closing of the 1 ft. 11½ in.-gauge Welsh Highland Light Railway (to which we referred in our issue of November 24) will falsify the high hopes entertained when the Light Railway Order was granted in 1922. The Government then gave assistance, and £31,000 debenture stock was subscribed by the Carnarvonshire County Council, the Gwyrfa, Glaslyn and Deudraeth Rural District Councils, and the Portmadoc Urban District Council. These authorities approached the debenture holders recently to seek abandonment of the whole line, with the exception of the Portmadoc-Croesor section which serves quarries expected to be reopened shortly. The whole of the undertaking was authorised as long ago as August 6, 1872, as the North Wales Narrow Gauge Railway. It was opened between June, 1877, and May, 1881, from Dinas Junction to South Snowdon. For lack of funds the extension to Beddgelert and Portmadoc was not begun for twenty years, but the old Croesor-Portmadoc horse tramway, which by Act of July 21, 1879, had become the Portmadoc, Croesor & Beddgelert Railway, was purchased under an Act of 1904 by a new company, formed in 1901, known as the Portmadoc, Beddgelert & South Snowdon Railway, to revive the old powers and make the connection. The war delayed matters until the new tourist route was developed by the local interests which also control the Snowdon Mountain Tramroad and Hotels and the Festiniog Railway. It is from the train that some of the best scenes in the Pass of Aberglaslyn can be seen, while the reverse curves north of Beddgelert are the nearest approach offered in Great Britain to Alpine spiral loops.

### British Railway Safety in 1933

British railways continue the high standard for safety in railway travel that they have enjoyed since 1928—the year of the Darlington and Charfield accidents. There were only two accidents last year in which passengers lost their lives—four killed in the Raynes Park derailment of May 25, and one killed at Glengarnock on September 30 by a passenger train being struck by a displaced load on a passing freight train. In 1932 there was only the Great Bridgeford derailment, in which, also, four passengers lost their lives. The fatalities to trainmen in train accidents amounted to nine servants, killed in six accidents: a fireman at Loughborough on January 31; driver and fireman in Vriog cutting on March 4, and at Crich Junction on June 17; a driver at Little Salkeld on July 10; a motorman at Altrincham on December 6 and a driver and fireman at Hellfield on December 19. In 1932 there were only three railway servants killed in three accidents.

### Useful Co-operation

Of all the useful methods of co-operation between the railways of a country none is better than when they join together to secure common representation abroad. The average traveller who wants to fare afield knows little or nothing of the domestic transport arrangements of the countries he would visit and is apt to be confused, if not positively alarmed, when confronted by opposing railway agencies urging him to travel to certain places rather than others, and by particular routes, from which, if he should stray, he must pay perhaps more than he expected. It is therefore all to the good that the logical outcome of pooling between the British railway systems should have led with little delay to the establishment of joint offices in Paris and New York. The latter, it is true, owing to special local circumstances, represents only three of the British main line railways, but eventually it may be expected to incorporate them all. Besides convenience and attractiveness to the public, working economies will be possible by these new arrangements. The inauguration of the new Paris office, which we describe in our news section, was attended by the British Ambassador and by chief officers of the French as well as British railways, and was a notable event in the French capital this week. Traffic between England and the Continent is, we are glad to say, steadily increasing, particularly from France to this country. It may be expected that the new joint arrangements in Paris will help further to stimulate this traffic.

### The Locking of Spring Points

Spring-returned points, adapted to lie normally in one position and to return to it after being forced over by a wheel coming from the wrong direction, have been used almost from the commencement of street tramways at single-line passing loops. To a limited extent they have long been used on railways for special purposes, such as runaway catch points. In recent years their use has been extended to trailing points at certain signal-boxes, where a saving in equipment can be obtained without any sacrifice of safety. The use of the spring return action for facing points on railways, however, is complicated by the necessity of locking them securely and at the same time permitting them to be taken from the wrong direction without damage, which is obviously essential when they are used, say, at passing loops. Several methods are known by which this can be done. With points of the German type there is no great difficulty in the matter, and in the simplified light-railway working spring-returned points are much used by the Reichsbahn. But where the point tongues are rigidly coupled together the problem

is quite different. On the Mumbles Electric Railway the Sykes automatic lock, described in our issue of July 19, 1929, has been in use with complete success for over four years at eleven pairs of loop facing points. In this case the lock is positively withdrawn by the trailing vehicle actuating an outside depression bar before its wheels reach the closed tongue. In the United States locked spring-returned points are now being used in increasing numbers and the lock is generally removed by the trailing vehicle slightly deflecting the open tongue in time. An oil dashpot prevents the points from returning after every wheel or bogie, but on the Mumbles line, where the trains are mostly limited to two cars, this was not found necessary. Time is being saved at crossing places by the use of these devices and the provision of apparatus to enable the points to be worked from a distance is also avoided, enabling appreciable economies to be realised. It would be possible, we feel, to simplify many single-line stations in this country by using automatic locks and spring-returned points.

**Streamlining on Railways** Many experiments have been carried out for the purpose of determining whether, by the process of streamlining locomotives and passenger vehicles on railways, the reduction of wind resistance represents a sufficient gain to warrant the more general adoption of the system. For many years past railways, more particularly in France, but in other countries as well, have adopted the streamlining principle in varying degrees for locomotives, the smokeboxes, chimneys, and cabs being fitted with prows, the object of which is to deflect the air currents and thus lessen resistance to progress. The tendency nowadays is, however, to abandon the idea in so far as locomotives are concerned, at least in its more pronounced form, but to extend its use in the case of self-propelled cars, especially those designed for high-speed work. Developments are forecast, and in several cases have already been carried into effect, whereby the present type of train, in more than one category, will be supplanted by extremely light-weight trains propelled either by steam, electric, or diesel engines, the vehicles of which they are comprised being designed on the streamline principle. Tests have shown that such measures not only permit of increased average speeds with the same output of energy, but of lower fuel costs as well, and this combined result naturally provides a strong incentive to railway companies to investigate the possibilities of extending the use of vehicles so constructed.

**Light High-speed Locomotives** In advocating the adaptation of steam power to new requirements, our contemporary the *Railway Mechanical Engineer* remarks that the renewed interest shown in light-weight high-speed passenger trains may encourage the introduction of a new type of steam locomotive designed to meet these requirements, but consisting largely of detailed parts already thoroughly tested and proven. The new design visualised will simply be a scaling down of dimensions and other characteristics: high tensile nickel steel boiler plates will be used in order to reduce weight, and similarly alloy steel castings, special steels, bronze bearing metals and bronze aluminium alloys also, which, in addition to reducing weight, will give increased service. Improved new materials and design will be employed wherever possible, and it is suggested that welded tubular construction as used in aeroplane practice could be used to advantage, especially for displacing heavy cast brackets for attaching accessories. These accessories would all be smaller and lighter, in keeping with the main idea of a

smooth running high speed locomotive for light-weight passenger service. Such important fitments as superheaters, feed water heaters and thermic syphons will be utilised to the fullest possible extent, to give boiler capacity within compact limits, and roller bearings may contribute in making possible long runs at high speeds and low maintenance cost. Full advantage would be taken of previous wind tunnel tests on streamlining and, whilst the locomotive and its train would together form a streamlined unit, the train would be made up of a locomotive and carriages having all the flexibility for traffic variations provided by the present types of construction.

### Locomotive Cleaning Methods

The process known as "hosing down" a road motor vehicle is probably the most effective way of getting rid of accumulations of mud and other impurities picked up by the vehicle itself or thrown over it by others in passing. On railways, however, the time-honoured method of employing a squad of locomotive cleaners armed with swabs soaked in oil solvents for removing the grease and dirt adhering to the parts, is, so far as the materials used are concerned, perhaps the cheapest available, but when viewed from the standpoint of labour charges the case is very different. The results also are not always all that is to be desired and other and quicker means of performing the work have been sought, among them that of spraying engines with jets of hot water at high pressure or water containing an admixture of chemicals. The latter system has recently been installed at the locomotive depot of the L.N.E.R. at King's Cross, where at present 96 tank engines are cleaned by the new process in a week, the time allowance being three hours per engine per man, a saving of three hours for every engine treated. The degree of cleanliness obtained is stated to be much in advance of that secured by the hand method. Although from the data so far obtained no increase in the number of overheated bearings has been disclosed, careful attention has of necessity been given to the possibility of harmful effects accruing from the employment of the system. Further details respecting the method will be found in the illustrated article on page 18.

### Railway Machine Shops

Those acquainted with modern railway machine shop practice know that considerable strides have been made during recent years towards its improvement. This applies equally to the machines themselves and to the methods by which the shops are governed. Floor to floor time allowances have been reduced and a general speeding up of work and processes effected, with, in many cases, an advance in the accuracy and finish of the articles produced. Considerable reorganisation of the shops and the processes therein carried out has been required, and this has been planned in accordance with strict time scheduling and progress methods whereby unnecessary manhandling has been deleted and time saved in many other directions. Shop to shop communication and means of transport have similarly been re-arranged on more precise and systematic lines, with the result that many important economies have been effected. Refinements in the design of machine tools and more rapid handling and distribution of the work have brought about this desirable state of things, and to-day the average railway machine shop, certainly those where operations are carried out on a large scale, represents an excellent example of what a productive establishment of its kind should be. The December issue of *The Railway Engineer* was in the form of a special number dealing comprehensively with this subject.



## 1933-1934

## Retrospect and Prospect

THE year 1933 has witnessed so many important developments affecting rail transport in this country that it must be regarded as one of the most, if not the most, notable in the history of the four main-line companies during the last decade. Two vitally important railway measures were placed on the Statute Book during the year. The first of these, the London Passenger Transport Act, was designed to secure, as from July 1, the co-ordination of the whole of the passenger transport arrangements within the Greater London area by placing under the control of a new Board the omnibus, coach, and tramway, and certain railway companies, and, by means of a pooling arrangement, the suburban services of the main line railway companies. The importance of this measure to the main-line companies can be gauged from the fact that over 600 of their stations are situated within the area, and from these approximately 500,000,000 passenger journeys were made in 1932. Although the Board has been in existence only for a few months, its possibilities have already been revealed by the steps taken to develop through services, adjust anomalies in fares, and increase facilities. Of even greater importance was the enactment of the Road and Rail Traffic Act which marks another decisive step towards the co-ordination of the country's transport facilities. This Act is designed to assist both sides of the goods haulage industry to carry out their functions under equitable conditions calculated to safeguard adequately the interests of trade and industry. Its essential features are the establishment of a system for the licensing and regulation of motor goods vehicles; the enabling of the railway companies to charge agreed "flat" or "composite" rates for the transport of traffic, subject to the approval of the Railway Rates Tribunal, and the creation of a Transport Advisory Council for the purpose of giving advice and assistance to the Minister of Transport in connection with the discharge of his powers under the Act relative to the co-ordination, development and improvement of the transport facilities of the country. In the latter connection, it will be recalled that during the year the main line companies have acquired the controlling interest in the old-established and world-famed cartage firms of Carter Paterson & Co. and Pickfords Limited, whose activities have in some respects overlapped those of the railway companies. The co-ordination of operation which will gradually be effected should avoid wasteful competition, secure the pooling of available resources, and increase efficiency.

A further important development was the sanction by the Minister of Transport of the scheme for pooling the receipts from competitive traffic conveyed by the Great Western, London Midland & Scottish, and London & North Eastern Railways. The immediate result was a considerable extension of alternative route facilities for passengers, which has been greatly appreciated. The object of the pooling arrangement is the elimination of the cost involved in connection with competitive traffic where the expense involved is disproportionate to any benefit derived and, concurrently, the increase of facilities for the public. Steady progress is being made with the review of existing competitive arrangements but alterations are necessarily somewhat gradual having regard to the companies' obligations to the public and their staffs. Probably the most popular event of the year was the experimental introduction of Summer return tickets on May 1, at the rate of 1d. a mile (third class) and 1-66d. (first class), available by most trains on any day with a maximum availability of one month. The extended

availability of the tickets compared with former excursion tickets and the freedom from irritating restrictions as to train service have made them extremely popular. Their introduction involved the risking of a substantial amount of revenue, but the step taken by the companies has been justified by the results to date, although it should not be overlooked that contributory factors were the exceptionally fine weather experienced throughout the summer, the decrease in unemployment and the extended electrification of the Southern Railway. The continuance of these tickets throughout 1934 will provide a more reliable guide for the future. Other interesting passenger traffic developments during the year were the successful land and sea cruises, particularly those of the London & North Eastern Railway, holiday haunt expresses, holiday season tickets, &c., while innovations such as parking facilities for motorcars at stations, reduced fares for passengers accompanying furniture removals by rail, reduced rates for the conveyance of motorcars, bicycles and dogs by railway, were all indicative of the companies' efforts to attract and create traffic. On the locomotive side, valuable experiments are also being conducted by the companies in connection with the use of diesel-engined and light petrol units for varying types of work. Widespread improvements have been effected in passenger and freight trains, additional railhead distribution centres and country lorry services have been instituted, while a large number of additional containers has been constructed to meet the rapidly growing demand for this facility. The registered transit system introduced by the Great Western Railway, under which, for a small fee, the transit of traffic is controlled throughout, has been extended to the whole of Great Britain. The year also witnessed the introduction of the first railway air service in this country, that operated by the Great Western Railway in conjunction with Imperial Airways Limited between Birmingham, Cardiff, and Plymouth. The experienced gained in connection with the operation of this service will prove extremely valuable when further air transport operations are under consideration by the companies.

Many of the development schemes undertaken by the railways under the Development (Loan Guarantees and Grants) Act, 1929, have been carried out and, when they are all complete, there is little doubt that the standard of operating efficiency of the railways will be higher than ever before. The latest figures published by the Minister of Transport already indicate that the average speed of passenger and freight trains and the average load conveyed by freight trains has increased, while an improvement has also been achieved in the net ton miles worked per train and engine hour. The published traffic receipts for the 52 weeks show a decrease of £109,000, compared with 1932, but, thanks to the strenuous efforts which have been made to reduce expenditure without impairing efficiency, the net revenue position is likely to show a slight improvement on that for 1932. At the best, however, this can only be relatively small having regard to the fact that the net revenue of the four companies for 1932 amounted to about £26,400,000 as compared with £45,000,000 for 1929. It is somewhat difficult to estimate the prospects for 1934 as British trade is so largely dependent upon foreign financial and economic conditions which, at the moment, are uncertain. A slight trade recovery became manifest towards the middle of 1933 and a continuance of the present trend will steadily improve the railway revenue position, particularly in the earlier months of 1934. Any approach to the 1929 results can be achieved, however, only if trade really begins to boom. So far as can be seen at present, unemployment is likely to decrease steadily and some relief from taxation may be afforded in the next Budget.



### Viscount Churchill

**V**ISCOUNT CHURCHILL'S sudden death on Wednesday in the fullness of his powers will be felt as a heavy blow by all railwaymen and not least by those connected with the Great Western Railway. Joining the Board of that Company in 1905, he succeeded the late Mr. Alfred Baldwin as Chairman in April, 1908, and had thus been nearly 26 years in office at the time of his death, a period longer than that enjoyed by any other Chairman of the Company since its incorporation almost 100 years ago. Lord Churchill touched life at many points. As a Page of Honour, and later a Lord in Waiting, to Queen Victoria he became familiar with the ways of Courts; his service with the Coldstream Guards from 1884 to 1889 gave him experience of soldiering; and as one of the Conservative whips in the House of Lords he gained a thorough knowledge of politics. This varied training helped to make him a most successful railway chairman, in that he knew how to handle men of all classes. His addresses to shareholders were always stimulating, while his courtesy and apt and tactful replies to inquiries or complaints generally allayed any discontent. Other railway companies have also reason to be grateful to Lord Churchill for his Parliamentary activities on their behalf. He was Chairman of the Railway Companies' Association on two occasions within recent years, and constantly in touch with Members of Parliament when legislation affecting railways was in progress. He was in attendance at Paddington almost every day, and relations of the most cordial nature always existed between him and his staff, by all of whom he was greatly loved. To mark the 25th anniversary of his election to the Chairmanship, Lord Churchill in May last received a presentation from his co-directors, when his services to the railway industry generally received cordial acknowledgment.

### French Railway Safety

**I**N the early days of railways, when speeds were much lower and trains less frequent, there were many more accidents than there are now when traffic is both denser and more rapid. For this improvement, studied development of design and methods of operation are responsible. This country was among the pioneers of safety first on the railways, although others, such as Germany, Holland and Switzerland, did not lag far behind. On the other hand, the reputation of some of the smaller countries and of France and America in regard to the safety of railway travel was, until comparatively recently, not a very good one. Unfortunately for those countries, the bad name they gained has been difficult to live down, although the extraordinary progress their railways have made in the last decade or so has placed them among the safest in the world now. On the French railways the average number of passengers killed as the result of train accidents during the four years 1928-1931 was only 16.5 annually. In the United States only one passenger was killed in a train accident in 1932. The record of the railways of Great Britain for 1928-1931 was an average of 15 deaths annually. These figures may be compared with 6,700, representing approximately the average number of lives lost annually in road accidents in this country during the same period. The latter figure, of course, includes deaths of both passengers and pedestrians, but, even so, provides quite a good idea of the relative safety of the two forms of transport. Chief among the measures effectively taken for safeguarding railway travel, have been the adoption of block signalling, continuous automatic brakes, and improvements in design and maintenance of permanent way and rolling-stock. Although finality has

not yet been reached in any of these directions, and progress steadily continues, it is true to say that, judging from the figures of casualties inflicted in railway accidents compared with those suffered by other forms of transport and, indeed, by any other classified type of accident, there is no safer place anywhere in the world than a railway train, it matters not in what country.

The unfortunate disaster at Lagny on the Eastern Railway of France on the eve of Christmas, which cost over 200 lives, has created a profound impression not only on the Continent but in this country, and the floodgates of uninformed criticism of railway methods have been opened. Despite the evidence of the figures quoted above, it seems to be generally assumed that British railways are much safer than any others but that they are not yet safe enough, and an agitation has arisen for the complete substitution of steel for wood in the construction of passenger rolling-stock. It is further suggested that of all countries France is the most hazardous to travel in, although the proportion of steel to wooden carriages on French railways is considerably higher than here. This agitation about steel trains arises quite naturally from a contemplation of the havoc wrought at Lagny on the standing train of wooden coaches by the 65 mile-an-hour all-steel express which dashed into its rear and escaped almost unscathed. Had the standing train also been composed of steel carriages there is little doubt that the casualties would have been far fewer, but they would probably have occurred in both trains. The express would have met a much more formidable obstacle and would have been pulled up with greater suddenness. The standing steel coaches would not have been splintered as the wooden ones were, but those in the rear would undoubtedly have been hurled about and badly damaged. The chief casualties in a collision between two steel trains would result from the throwing about violently of their contents. Although all new passenger rolling stock on most Continental and American railways is being built of steel, it must not be supposed, because the British railways do not go so far, that they have neglected the matter. New British carriages have for some time been built with steel underframes and special anti-collision buffers, and the wooden body frames are nearly all covered with steel sheeting. It is thus possible to keep the weight down and at the same time to produce vehicles not very much less strong than those of all-metal construction.

Apart from the strength of rolling-stock to withstand collisions and derailments, the actual prevention of such accidents is of vital importance, measures for the achievement of which are more a matter of expense than of technical knowledge. Since the war expense has not been spared by the French railways and no one with any first-hand knowledge can deny that the standards achieved in that country are second to none in the world to-day. It is ridiculous to talk about defective French permanent way when a campaign has been steadily prosecuted by admittedly capable engineers, for the past ten or fifteen years, of relaying with heavy material, re-aligning, re-ballasting, the provision of ample drainage and the perfection of maintenance methods. The results of this campaign are apparent to any observant traveller in France, and have, in fact, coupled with the tremendous improvement in locomotive practice, enabled the French railways to take a leading position in safe high-speed train operation.

As regards signalling, the block system is now general on all the main lines and automatic signalling has been extended in many directions, on no line more extensively than on the Est. Highly ingenious and reliable systems of automatic and semi-automatic signalling and point operation have been installed at many of the larger stations on all the French systems, and a start has been

made on the installation of centralised traffic control on heavily trafficked lines. Cab signalling, worked in conjunction with an automatic speed indicator and recorder on the locomotive, is universal on the main lines. As in this country the essential signals governing the movement of trains on running lines are a stop signal preceded by a distant or an outer-deferred-stop signal. Opposite the latter is a ramp or "crocodile" raised slightly above rail level, and beneath the locomotive a metallic brush which makes contact with the copper top of the crocodile. If the signal is at "warning" the crocodile is charged with an electric current which passes through the brush to an apparatus on the locomotive cab which sounds a whistle. This continues to sound until the driver shuts off steam. On the speed recorder is a drum over which passes a band of paper continuously moving and recording automatically the speed of the train throughout its journey. The passing of a distant signal at "warning" is also automatically recorded on this moving strip of paper. On the Est a clear indication is recorded as well. In order to check the attentiveness of the driver in observing his signals, a "vigilance" handle is provided in the cab, the pressing of which prior to the passing of a signal at "warning" will prevent the whistle sounding and is also recorded on the paper strip. Should the driver have failed to press this vigilance handle before passing the signal, the whistle will continue to sound until he shuts off steam, which action is also recorded. In the case of the Lagny collision, such evidence as has been divulged seems to point rather to the possibility of a failure of the cab-signalling apparatus than to any defect in the signalling.

Of the four British main line railways, only the Great Western uses a system of cab signalling similar to that used in France, but with the important addition that besides sounding a whistle in the cab the contact between the engine and the ramp if the distant signal is at "warning" automatically applies the brake, unless the driver has previously observed the position of the signal and stopped this action. There is another and vital difference that, whereas the French system depends upon the picking up of an electric current to give the warning to the driver, the Great Western system depends upon there being no current passing to give the warning. Current passes only when the distant signal is at "clear," thus any failure of the current due to whatever cause, whether it be the breaking of a wire or the frosting over of the contact surfaces, automatically gives a warning to the driver and applies the brakes. Although careful attention is given to the proper maintenance of the cab signalling apparatus in France, and elaborate precautions taken to prevent weather conditions interfering with it, the fact remains that a failure is not on the side of safety, and that records presented to the International Railway Congress at Cairo last January indicate that there have been quite an appreciable number of failures. Systems of cab signalling such as the French and the Great Western, and similar systems in use in other countries are, of course, intended to supplement the vigilance of the enginemen and not to replace it. In foggy weather, however, when the sighting of signals becomes a matter of difficulty, the relative importance of cab signalling naturally increases.

The main line of the French Eastern Railway is equipped with automatic signalling from the Paris terminus for a considerable distance outwards beyond Lagny, and a few notes on its method of working may here be given.\* Each signalling section is protected by a *sémaphore de couverture*, or stop signal, preceded by a *damier vert et blanc*, or distant signal. These signals are normally at "line clear," and opposite the latter is the usual crocodile

already described. Each stop signal is equipped with a detonating machine which, should it be passed at "danger," fires a cartridge, the sound of which is concentrated in a trumpet. Detonators are not placed on the rail, as is usual in this country in foggy weather, except at absolute stop signals which, on automatic-signal sections, are generally brought into operation only at places where shunting may take place or where there is a signal-box. In that case detonators coupled direct to the signal are placed on the rail. The automatic signals are controlled by continuous track circuiting, and of course remain at "danger" until the train has passed out of the next section ahead. In addition, the signalling circuits are so arranged as to give, as is usual in France, what is called the *contrôle de fermeture*, or proof that the signals are put to "danger" after each train. Should the stop signal, or its distant signal, not go to the protecting position when a train passes, the set of signals in the rear also cannot "clear" again until the line is clear and the next set working correctly. In the event of a failure of the electric current or apparatus the signals go to danger in the ordinary way as in this country. It may thus be seen that the French railways have elaborated their signalling systems to give a high degree of safety, but that there still remains what seems to be a serious risk in the dependence placed upon the passage of an electric current to give a cab-signal warning.

The speed indicating and recording apparatus with which every French locomotive is equipped has already been mentioned, and this in itself provides a safeguard of great value to train operation. It further enables a high standard of punctuality to be observed with safety, for it becomes practicable to issue instructions to enginemen to recover lost time by running at the maximum speed allowable where possible. The continuous record of the speed of the train provided by the apparatus is examined after each run, and should it indicate that specific speed restrictions have been ignored or exceeded, the driver is liable to be severely punished. The result is that the observance of speed restrictions in France is more meticulous than it is in this country, and simultaneously the standard of punctuality is very much higher. A long-standing speed limit of 120 km.p.h. (75 m.p.h.) is in force on the French railways, although a tolerance up to 78 m.p.h. is permitted. There is no such general limit in this country, nor has any accident occurred due solely to high speed to justify the imposition of one. In view of the great improvement which has taken place of recent years in French permanent way and rolling stock, it is probable that the restriction there may be raised in the near future. Within the limit at present laid down, however, the French railways are able to provide very high speed express services. On the French Northern Railway, for example, nearly all long distance expresses are now booked at average speeds of about 60 m.p.h., and the other lines provide comparable schedules, the overall average of which depends upon the number of stops and speed restrictions to be observed on the way and for which, of course, allowance is made. Nothing but all-steel passenger stock has been built for some years in France, but owing to recent financial stringency the rate of replacement of wooden stock has had to be drastically curtailed. This same stringency has also necessitated the slowing up of other improvements, and it is well that in the previous ten years or so it has been possible for the French railways to expend large sums on the improvement of their equipment. A great deal still remains to be done before perfection is reached, as the remarks of M. Dautry we quote on page 24 clearly indicate. That so much has already been achieved is highly creditable to the efficient and enterprising engineers and administrators of the French railways.

\* For a more detailed description, see THE RAILWAY GAZETTE of October 13, 1933, pages 523-4.

## LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of Correspondents)

**George Jackson Churchward**

25, Victoria Street,  
London, S.W.1.

December 29.

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—May I add a postscript to the valuable article on the late Mr. G. J. Churchward appearing in your current issue. As you observe, Mr. Churchward became Locomotive Superintendent of the Great Western Railway in 1902, but, as a matter of fact, the evolution of the Great Western locomotive, as we now know it, had commenced under his able hands some years earlier. As Inspector Greenaway once remarked to me, "The first thing Churchward did was to design a boiler that would steam." This boiler appeared, to the astonishment of everyone, in 1899. From that moment Swindon carried out a series of exhaustive tests which left nothing to chance. The Great Western machine took on a new shape, strange in the *Waterford* of the "Badminton" class, alarming in the "Kreugers" of 1899, and intriguing in the "Atbaras" of 1900. Every factor in locomotive efficiency was investigated and experiments of one kind or another were continuous until, both for mineral and passenger traffic, the Great Western machine had gained a reputation all its own.

We have had many able mechanical engineers in this country, but, more often than not, we think of their engines as sporadic efforts to meet the needs of the moment. The Churchward machine, on the other hand, was, if I may use the expression, a continuing process. The truth grew and built itself up, and from time to time expressed itself in steel. Thus eventually we came to think not of this or that class of locomotive, but of the principles evolving in the background. In short, to understand the work of this great locomotive engineer we must see it from the beginning, from the moment at which he first tentatively broke with the type of machine then almost sacrosanct upon the Great Western Railway.

I am, &c.,  
ASHLEY BROWN

### Flat Rate v. ?

C/o The Railway Commission,  
Bulawayo, S. Rhodesia.

December 11.

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—May I protest against your employing the term "flat rate" to indicate such systems of charging for railway transport as are applied to Woolworth & Co.'s traffic (see THE RAILWAY GAZETTE for November 10, 1933, page 686) and to Robinson's traffic from Bristol. In both these cases what is intended is a uniform charge per ton applied to the total traffic for which a firm is responsible, whatever its description or whatever its length of haul. This charge is based upon the average rate paid before the uniform charge was introduced, though the average may have been modified in the process of negotiating the "agreed charge."

Now as the expression "flat rate" has, in the past, been used to describe a very different kind of rate, it is very confusing to apply the same term to the average charges above described. The railways were responsible originally for this misuse of language, for they described the rate they were attempting to justify in the Robinson case as a flat rate, but this does not excuse THE RAILWAY GAZETTE for perpetuating the railway error. I see I have used the term "uniform charge." Another writer, following the Road-Rail Bill, has used "agreed charge" and "Robinson" charge. All three are defective in that they do not sufficiently describe the kind of charge intended, but all are much to be preferred to "flat rate."

In view of the importance this Robinson type of charge may assume in the future, I trust THE RAILWAY GAZETTE

will refrain from misusing the term "flat rate," and will assist the railways and the Rates Tribunal to invent an alternative phrase which will not misapply existing semi-technical language.

ROGER GIBB

[While we agree with Mr. Gibb that "uniform charge" is probably a better description than "flat rate," the latter term has become so well understood in railway practice that it would be misleading to railwaymen generally to substitute the term "uniform charge" unless such a practice were universally agreed and generally adopted.—Ed. R.G.]

### Testing Standard Locomotives in India

Bombay.

December 8.

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Referring to a letter by "Efficiency" in your issue of October 13, "Efficiency" seems to be under a misapprehension regarding the mechanical efficiency of a locomotive. The ratio d.b.h.p. to i.h.p. only gives the mechanical efficiency of a locomotive on a stationary test plant. Goss gives the losses due to machine friction for a locomotive as about 5 lb. m.e.p. On a road test the ratio d.b.h.p. to i.h.p. besides including losses due to locomotive machine friction, also includes the resistance to traction of the locomotive. This latter factor includes wind resistance, of which a considerable proportion is head-on resistance. As the loading gauge for the I.R.S. locomotives in question is 14 ft. 6 in. x 10 ft. 6 in. whereas the loading gauge for the majority of the European locomotives quoted is probably about 13 ft. 6 in. x 10 ft. 2 in., the comparison hardly seems fair. Further, as the wind resistance varies as the square of the relative speed of the train, the figures quoted are of little practical value.

To boost a Krauss truck or side play of coupled wheels on the score of resistance to traction does not convince. As a maximum figure such appliances could only reduce the total resistance to traction of the locomotive by, say, one per cent., except on very sharp curves, and the incidence of sharp curves on the I.S.R. is given as less than one per cent. of the total mileage.

To boost side play for coupled wheels as reducing frame stresses, &c., may be more convincing.

"LOGOGIP"

### Steel Coaches

72, Grove Park Road,

Chiswick, W.4.

December 30.

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—While one appreciates surmises, based on incomplete knowledge, appearing in the non-technical press with regard to the very sad accident which occurred in France on December 23, it is with surprise that one finds the caption under the photos of the accident which appeared in your issue of December 20 calling attention to the small amount of damage sustained by the steel coaches on the moving train, as compared with the immense damage suffered by the wooden stock of the stationary train. As the circumstances affecting both were so entirely different, the comparison is misleading.

Had the steel stock been on the stationary train, it is more than reasonable to assume that the result would have been such as to prevent some of the exaggerated comments with regard to rolling stock which have recently appeared in print.

Yours faithfully,

C. GRASEMAN

[This subject is dealt with in an editorial article on page 5.—Ed. R.G.]



## THE SCRAP HEAP

### DEATH OF G.W.R. CHAIRMAN—A STRANGE COINCIDENCE

Elsewhere in this issue we record the death, early on Wednesday morning, of Viscount Churchill, Chairman of the Great Western Railway Company. On Tuesday evening last the engine of the 6.10 train from Paddington to Birmingham failed at Ashendon junction and had to be replaced. The name of the engine was *Viscount Churchill*.

\* \* \*

### KINDNESS REWARDED

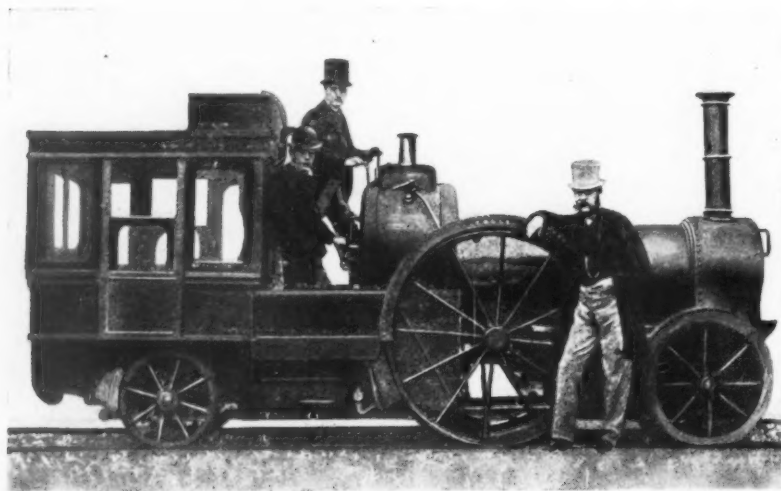
A newly-born baby was found in a box which had been sent to a station-master at Bilbao. The baby was about to be handed over to an orphanage when one of the porters at the station decided to adopt it, states a Reuters message. "One more in a family of seven won't make much difference," he said. When the baby was undressed by the porter's wife a bundle of notes worth £500 was found in his clothes.

\* \* \*

The driver and fireman of a certain well known locomotive were seriously affronted when their engine was referred to as "a box on wheels." Inasmuch, however, as the driver's name was Box and the fireman Tarbox, whilst the engine had 18 axleboxes, a firebox, a smokebox and a dragbox, the term, offensive though it might appear, was, perhaps, not altogether unjustified.

\* \* \*

An interesting photograph, which we reproduce below, has recently come into our hands. It shows the steam carriage "Eagle," which was built in 1849 by Mr. Hedley, of the Eagle Foundry, Cambridge, for the use chiefly of the Engineer and Superintendent of the Eastern Counties Railway. This very early form of steam rail motor had a total heating surface of 22 sq. ft. and a grate area of 2.6 sq. ft.



Officers' steam carriage "Eagle" of 1849 on the Eastern Counties Railway

It is not outwith the bounds of fact to state that no snow-storm has ever caused such widespread confusion on the railways of Scotland as that which occurred this week. In the north-eastern districts the fall is said to be heavier than that which occurred during the Elliot junction disaster [two years earlier]; one correspondent compares it to the storm of 1855. No trains were able to get through from the North, and at Guthrie junction about a dozen trains for the North were snowed up.—*From "The Glasgow Herald" of 25 years ago.*

\* \* \*

Jock and his wee son were on the Aberdeen express, returning home to celebrate Hogmanay among their ain folk. Jock was holding a watch in his hand and studying it with intense interest. Suddenly he appeared to be satisfied and beckoned to the ticket inspector. "What is it?" the inspector asked. "I want to pay the rest of my son's fare," said Jock. "He has just become twelve years old." — *To-day's Story from the "North Mail."*

\* \* \*

### RAILWAY HERO WORSHIP

An enthusiastic admirer of the L.M.S. train the Royal Scot during its recent triumphal progress through Canada and the States, when pressed for a statement, remarked: "The effect of the Royal Scot on me was to make me almost worship the memory of Robert Stephenson, the man who fixed up the

### The Thrill That Comes Once in a Lifetime: BY WEBSTER



A Webster cartoon, published in our American contemporary the "Railway Age" by courtesy of the "New York Herald Tribune"

first really reliable passenger locomotive. From the day (in 1829) when that great pioneer won the Liverpool & Manchester Directors' £500 competitive prize with his *Rocket*, he gave his very lifeblood for the cause of railways. On the day of the opening of the Liverpool Manchester line on September 15, 1830, he resolved that railways should be his great gift to the Empire. "Think of it," said this Canadian traveller, "in order to settle in his own mind on the very best permanent way for a London-Birmingham line, and to gauge the extent of the engineering effort required for all the excavations for tunnels and cuttings in so many strata, he actually walked the whole 113 miles himself twenty times."

\* \* \*

Abstract from report of local newspaper:—

### EXPRESS TRAIN DELAYED: ALTERCATION ON THE FOOTPLATE

The express train due to leave . . . Junction at 3.15 p.m. for London was held up for several minutes yesterday owing to a dispute between the engine driver and fireman. It would appear that the engine driver, Cole, and the fireman, Waters, fell out over a question of steam. In the course of the argument Cole became very heated and although Waters correspondingly evaporated it was not until an official mounted the footplate and poured oil on the troubled Waters that the signal to start was obeyed.

N.B.—The printers were duly taken to task for the mis-use of the capital W towards the end.

## OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

**Opening of the Irrawaddy bridge—Central Brazil electrification—Rhodesia anniversary celebrations—Berne Convention revision at Rome—Railway reconstruction at Nantes—Joint P.O.-Midi working—Canadian hospital car**

### INDIA

#### Railways Inquiry

Mr. Pope's second visit to India has, apparently, raised apprehensions in some quarters regarding the intentions of the Government of India relative to a thorough review of railway administration by a committee of experts. Sir Joseph Bore, Member for Railways and Commerce, stated in his railway budget speech last February that Mr. Pope's report would provide not only means of economy but also the data on which the expert committee—which the Government still hoped to invite to India this winter—would be able to work. It is feared that the suggestion of the expert committee will now be dropped in view of the opinion expressed by Mr. Pope that no further investigations by experts are necessary.

#### Exhibition Trains

The popularity of peripatetic exhibitions seems to be increasing in this country. Three exhibition trains are now touring the country, all organised by private companies with the co-operation of the railways. The Indian Trades Exhibition Company of Bombay is the pioneer in this line of private enterprise, though the credit for the innovation rests with the Eastern Bengal Railway. The publicity value of such exhibitions is now definitely accepted, as many of the participants in the I.T.E. Company's exhibition had also taken stalls in the two similar trains run in preceding years by this firm. The Hindustan Railway Agency of Calcutta is also organising an industrial exhibition train to tour a large area served by the Bengal-Nagpur, East Indian and Great Indian Peninsula Railways. The Winter Bazar Special of the Eastern Bengal Railway will also be on tour again early in January.

#### Railways and the Assembly

The Railway Member and the Financial Commissioner of Railways had recently to appeal to the members of the Assembly not to address questions relating to trivial details of railway administration. These appeals provoked a long discussion as to whether certain directions of the Railway Board regarding staff matters were being carried out on a particular railway. The President intervened with the ruling that if questions on railway matters were admitted in the Assembly,

they must *ipso facto* be on matters of public interest and the House thus had the right to a suitable reply. If the question related to the action taken by a railway Agent on orders issued by the Railway Board, it was proper that the Agent should reply to the Board and that such reply should be communicated to the member who asked the question.

#### Irrawaddy Bridge, Burma Railways

The new Sagaing bridge over the Irrawaddy, which was briefly described and illustrated on page 641 in THE RAILWAY GAZETTE of May 12 last, was formally opened by the Governor of Burma on January 2, 1934. Trains are therefore able to run through between Rangoon and Myitkyana, a distance of 725 miles. The fabrication and erection of the steelwork, weighing over 11,000 tons, have been carried out by Braithwaite & Co. It has been named the Ava bridge after the old capital of Burma nearby.

### BRAZIL

#### Central Brazil Railway

With the impending electrification of the suburban lines and a portion of the main line, Colonel Mendonça Lima, the Director of this railway, has given orders for plans to be prepared for a comprehensive remodelling of the Rio terminus (Dom Pedro II). Extensive modifications in the track layout, to meet the demands of the increased train services, are contemplated, though even now the Central Railway's suburban and outer suburban trains total 360 on a normal week-day, or over 90 per cent. of the station's entire traffic. The station building itself is to be rebuilt on up-to-date lines. As regards the electrification, it is expected that the contractual negotiations between the Brazilian Government and Metropolitan Vickers will be concluded and the work commenced as soon as the consultant of the Finance Minister, who is studying the matter from certain legal aspects, has made his pronouncement. A party of engineers belonging to the British firm arrived in the country early in November, and are at present engaged in making exhaustive studies on the ground, so that the undertaking, once it has been definitely authorised, can be put in hand with as little delay as possible.

#### Railway Electricity Supply

As the price quoted by the Rio de Janeiro Tramway, Light & Power Company for the supply of electric current was considered by the authorities to be too high, the Minister of Communications drew up a scheme for the construction of a hydro-electric generating plant, the cost of which was estimated at approximately 65,000 contos. But in view of the fact that the city of Rio produces some 1,000 tons of refuse daily, an alternative suggestion has been put forward by Wilson Jeans & Company for the construction of one or more destructor plants, of the well-known type made by Heenan & Froude Limited, of Worcester, of which firm Wilson Jeans & Company are the Brazilian agents. If properly carried out, this scheme would provide the current required by the railway, and at the same time would solve the problem of the disposal of the city refuse, which has been a thorn in the side of the Municipality for many years past. The suggestion has therefore been very sympathetically received by the authorities, and is being carefully examined.

### RHODESIA

#### The Occupation of Matabeleland Anniversary

The Rhodesia Railways assisted considerably towards the success of the Celebrations Week held in Bulawayo between October 30 and November 5, not only by contributing financially, and by providing excursion fare facilities to Bulawayo from all points on the system, but also by entering into the carnival spirit that prevailed during the celebrations. A carnival procession through the streets of Bulawayo was a feature of the week, and an interesting section of this depicted the development of transport in Rhodesia, commencing with a band of native dancers followed by, among others, an ox wagon, a stage coach, one of the earliest motor cars in Rhodesia, an aeroplane mounted on a lorry, and a most realistic Rhodesia Railway locomotive. This engine took first prize and was the outstanding feature of the procession. Constructed on the chassis of a five-ton railway motor lorry, the engine was complete with cowcatcher, headlight, cylinders and piston rods, whistle, gauges and regulator in the cab, vacuum pipe, &c., and a four-wheeled tender (a five-ton trailer) with coal and appropriate tail-lamp. It was numbered 1933 and named "Miss Meredith" as a compliment to the daughter of Mr. H. Chapman, the General Manager.

The railway station was gaily decorated during the week, and an interesting feature was a series of silhouette panels on the walls of the entrance hall, depicting the Past, Present and Future of Rhodesian Rail, Road and Air Services. The railway series consisted of an old type 4-4-0 engine and small side-door coaches, the

present "Rhodesia Limited" hauled by a large Garratt locomotive, and a stream-lined diesel-engined three-coach train—"The Northern Flyer—Bulawayo to Cairo."

#### Estimates for 1934

The Railway Commission has approved the estimates submitted by the Rhodesia and Mashonaland Railways for the year ending September 30, 1934, which show an anticipated revenue of £2,608,900 and working expenditure of £2,021,300, giving an estimated shortfall of £634,000 on the amount required to meet the loan charges. General trade conditions have improved since the estimates were prepared, and it is probable that there will be an improvement in receipts, as increased traffic is likely as the result of the opening of Mufulira copper mine, the erection of a copper refinery at Nkana and contracts for the export of timber sleepers to the Union of South Africa. No alterations will be made in the present scale of rates and fares, as the companies have stated that they are satisfied the present charges should produce the standard revenue on a revival in trade.

## ITALY

#### Train Ferry Mishap

An unusual incident occurred on November 24 on board the ferry-steamer *Scilla*, which carries the through carriages from Syracuse and Palermo across the Straits of Messina to Villa San Giovanni. On leaving the harbour entrance at Messina the ferry ran into a violent gale and exceptionally strong currents with the result that, due to the rolling of the steamer, one of the passenger coaches broke loose and overturned, falling against the partition of the restaurant, which was damaged. The *Scilla* had to return to Messina and passengers were transferred to another ferryboat.

#### Berne Convention International Conference

The International Conference for the revision of the Berne Convention, which was held at Rome, has now concluded its work and at the last meeting, held under the chairmanship of Prof. Amedeo Giannini, the final agreement was signed by the following countries: Italy, Austria, Belgium, Czechoslovakia, Estonia, France, Germany, Greece, Lichtenstein, Holland, Poland, Roumania, Sweden, Switzerland, Hungary, and Saar Territory. The revised C.I.M. and C.I.P. (Convention Internationale Marchandises et Passagers) was signed by Italy, Belgium, Greece, Lichtenstein, Germany and Switzerland. The special committee for the establishment of a new international *lettre de voiture* (combined consignment note and invoice) has elaborated a memorandum which is to be submitted to all governments and in which a new type of *lettre de voiture* is proposed. This memorandum

has been signed by Italy, Austria, Belgium, Poland, Roumania and Hungary. All the above acts may be signed by other Governments before March 31, 1934.

## FRANCE

#### Railway Finance in 1934

The financing of the French railways in the coming year will involve the borrowing of funds amounting to six milliards of francs, or about £48,000,000 at par. Of this sum about £32,000,000 will be required to cover operating deficits. The needs of the railways will necessitate the issue of considerable loans early in the year. Hence the provisional budget estimates for the months of January and February, just approved by the Chamber of Deputies, authorise the railways to raise a preliminary sum of £16,000,000 out of the total required for the year.

#### Complete Reconstruction and Reorganisation of the Railways in Nantes

An agreement has been reached between the Paris-Orleans and the State Railways on a provisional plan for the abolition of level crossings in the town of Nantes. The town is cut into two parts by the line from Tours to Nantes and Saint-Nazaire, and communication between those parts is possible only by means of a number of level crossings. The new agreement provides for a reconstruction of the railway lines within the town and will be carried out in two stages. In the first stage the line between the Paris-Orleans station and the Bourse station, which is now on the surface, will be diverted so as to run in a partly covered cutting, one of the reclaimed arms of the River Loire being utilised for this purpose, while between the Bourse station and Chantenay the line will be carried underground. In this way all the level crossings on these sections of line will be eliminated except one at the entrance to the Chantenay station.

In the second stage traffic at the Orleans and State Railways stations at Nantes station will be reorganised. The former will be utilised for all express passenger trains and fast goods traffic and the latter for other goods and slow passenger trains. A marshalling yard will be constructed at Blottereau and the engine sheds transferred there. The Anjou light railway station will be closed and a platform reserved for its traffic in the new passenger station. The total cost of the work is estimated at about £1,600,000, of which nearly £1,000,000 will be required for the first stage. The funds will be raised by the railways and by local taxes, in addition to contributions by the State.

#### The P.O.-Midi Agreement in Operation

Steps to carry out the working agreement between the Paris-Orleans and the Midi Railway Companies have recently been taken. M. Tirard, presi-

dent of the Midi Company, has been appointed president of a committee, which is supervising the joint organisation of the two railways as from January 1. The committee has already had under consideration the possible economies to be effected by the fusion and has drawn up a general programme, which has been approved by the boards of directors. This programme includes the rapid extension of the electrification already carried out by both companies, the unification and rationalisation of equipment and the organisation of railcar services. But the committee is also attaching great importance to commercial questions. It intends to provide increased facilities for users of the railways by forming a service of liaison with road traffic and door-to-door delivery. For this purpose it was decided to form a special commercial service for the two railways, and it intends to make the utmost use of the supplementary measures, which are expected to be decreed as a result of the Railway Act of July 8, 1933.

## CANADA

#### Hospital Car for Work in the Wilds

A remarkable hospital car, intended to serve the needs of outpost settlements between North Bay, Ontario, and the boundary of Manitoba, has begun to operate along the main trans-continental line of the Canadian National Railways. It consists of a specially equipped coach, 79 ft. long, containing a four-bed ward, operating room and sleeping quarters for nurses and is complete in every detail for hospital and clinical work. The operating room is 10 ft. square and the operating table is so constructed as to permit of its being used as an emergency bed. There is a bathroom and kitchen in this mobile hospital, and in the kitchen a cooking range and a refrigerator. The car is staffed by the Canadian Red Cross.

## SWITZERLAND

#### An Italian Railcar Visits Switzerland

Considerable interest has been aroused by the passage through Switzerland on December 5 of an Italian railcar. Coming from Chiasso, this railcar, with accommodation for 80 passengers, toured the Federal Railway system to the frontier station of Buchs, passing through Lucerne, Berne and Zürich, on its way to Vienna, from which city it will go on to Czechoslovakia and Poland. The railcar in question was built in the Fiat works in Turin and is capable of attaining a speed of 145 km.p.h. (90 m.p.h.). It was not possible, however, to travel at this speed in Switzerland owing to the number of curves on the Swiss lines. The maximum speed did not therefore exceed 125 km.p.h. (75 m.p.h.).

A new Swiss Federal Railways agency was opened in Rome on November 25 last.



## NEW YEAR MESSAGES

## Sir JAMES MILNE, Chairman, Railway General Managers' Conference, 1934

Although the published traffic receipts of the four main-line companies for the first 51 weeks of the past year show a decrease of £278,000 the prospects for the forthcoming year are distinctly encouraging. The recent revival of trade has been well maintained, unemployment is steadily decreasing, and there is every hope that the next Budget will afford some relief from the present heavy burden of taxation.

During the past six months railway traffic receipts have improved to the extent of £2,477,000, but it is well to bear in mind that if comparison is made with the year 1929 the gross receipts of the four companies from all sources for the whole year would probably show a decrease of about £43,000,000, so that, although economies on an unprecedented scale have been effected since the commencement of the depression, a considerable amount of leeway remains to be made up before the companies' financial position is restored to its former level.

Despite the many difficulties encountered, the past year has been one of considerable activity and progress. There has been an all-round improvement in the operating efficiency of the railways, the latest figures published by the Ministry of Transport showing that the average speed of passenger and freight trains and the average load conveyed by freight trains have increased; also, that a greater number of net ton miles were worked per train and engine hour.

Events of far-reaching importance occurred during the past year in connection with the efforts of the companies to improve the facilities offered to the public. The experimental introduction of Summer tickets at a return fare of one penny a mile proved very popular, and the innovation is being continued throughout the whole of the coming year, whilst the additional privileges given to the public under the new pooling arrangements have been greatly appreciated. Many of the development schemes undertaken by the companies under the Development (Loan Guarantees and Grants) Act, 1929, were completed during the year, and good progress has been made with the remainder. As recently announced, the Southern Railway Company are extending the electrification of their system to Sevenoaks, Hastings and Eastbourne, and there can be no doubt that when all the improvement works taken in hand by the companies during the last year or two are brought into use, the standard of efficiency of the undertakings will be higher than it has ever been before.

Co-ordination of rail and road transport facilities has been carried a stage

further by the passing of the Road and Rail Traffic Act of last Session, which contains provisions for securing the better regulation of road transport, and a more equitable basis of competition between the two forms of transport. In this connection, mention may be made of the acquisition by the main-line railway companies of the old-established cartage firms of Carter Paterson & Company and Pickfords Limited, whose names are household

words and whose activities have to some extent overlapped those of the railway companies. The closer working arrangements which can now be effected will be of general benefit.

If the difficulties associated with international trading can be overcome, there should be a further fillip to trade which would go a long way towards restoring the railway companies to a position of strength and stability, and so enable them to play an even more important part than they have done during the last century in assisting in the development of the trade and commerce of the country.

## Mr. THOMAS HORNSBY, Divisional General Manager, North Eastern Area, L.N.E.R.

I have been entrusted with the pleasant duty of conveying the *L.N.E.R. Magazine's* message of goodwill to, approximately, three-quarters of a million people who may be said to constitute the great L.N.E.R. family. If the electrical experts of our company were able to connect me to your homes for a few moments on New Year's Eve I could express my message with a warmth that I can never hope to impart by writing it—but here it is:—

To the staff who labour in the service and to those who have retired from it, I wish all of you a happy and prosperous New Year. So far as happiness and prosperity are related to each other by the employment of our people and the condition of trade, then I certainly can say that the omens for 1934 are propitious.

In recent years, the writers of the new year's messages have had to admit that a deep depression which centred mainly over the L.N.E.R. continued with unprecedented intensity. I am in the fortunate position of being able to announce that there are signs of a weakening of the depression, and that an anticyclone is spreading from south to north. It is a hopeful feature, for the L.N.E.R., more than any other railway company, depends for its prosperity on carrying goods rather than people. Nearly 70 per cent. of our revenue is derived from minerals and merchandise and 30 per cent. from passengers, and for that reason the hum of machinery in motion should be a joyous sound to the ears of L.N.E. railwaymen. With 750,000 more people at work than a year ago, with a revival in iron and steel, in coal and in textiles, there can be no doubt that at long last there has been a turn in the tide of trade.

If my message is to be read in the homes as distinct from the offices, I can imagine my readers may exclaim "Save us from any statistics," but there is unmistakable evidence that the country and railwaymen have found that "renewed aspiration has been the best antidote to depression," to quote

a dictum of the late Viscount Grey, whose recent death has been a great loss not only to our country but also to our company.

Let me now enumerate a few things that the year 1933 has brought to fruition. If not an accomplishment of our own company, we can acknowledge with pride the progress of the Southern Railway in electrification. Equally we can pay tribute to the skill of the engineer and the scientist in bringing to greater perfection the use of crude oil for traction and the conversion of coal into oil. These two inventions may play a great part in the future of transportation. The Shenfield and Northallerton widenings are expressions of the faith of the railway management in the future of railway prosperity, whilst colour light signalling is yet another example which engineers have found of increasing the capacity and safety of the line.

Travel at a penny a mile, free from unpopular restrictions, has been offered in the Summer tickets. The weekly holiday contract ticket, the train cruises, the observation outings and the camping coaches have produced many letters of appreciation, whilst King Sol has beamed upon us as a sign of his high pleasure. The tourist train equipped with bucket seats and buffet cars are the principal contributions of our mechanical engineers to make railway travel popular and have found much favour.

We have seen with sympathetic interest the birth of the London Passenger Transport Board—the first example in this country of placing all transport in a defined area under the control of one authority. A Road and Rail Act founded on the recommendations of the Salter Committee has been placed on the Statute Book, and I think we may claim that it will help to solve many of the difficulties which have beset the rail and road problems in regard to the transport of merchandise.

But whilst these achievements catch the rays of the limelight, of much

greater value to the company is the sustained effort of every member of the staff doing his daily work, because the need for economy in working, for the maintenance of a high standard of punctuality, and for satisfying the trader and the traveller are greater to-day than ever they were.

On behalf of the management, I acknowledge with gratitude the team spirit which has enabled such a large percentage of our loss of business to be offset by savings in working costs.

If 1934 can carry us farther along the path which we commenced to traverse in the closing months of 1933,

of bringing back to employment those men who have left us through shortage of work, and of resuming the tradition that son should follow father in the Railway service, then the time-honoured greeting "A Happy New Year" which I send you should have a real significance.

#### Sir JAMES MILNE, General Manager, Great Western Railway

The substantial improvement in trade which has taken place during recent months has been well maintained, and appears to afford an indication that we are at last emerging from the long period of depression in trade through which we have been passing ever since the year 1929. In that year the company's gross receipts from railway and other businesses amounted to £36,184,000, but in the ensuing three years they declined to £28,462,000, a loss of £7,722,000, which was offset by reductions in expenditure amounting to £4,779,000.

During the first half of last year the Company's gross receipts decreased by £576,000, and expenditure by approximately £495,000, the decrease in net revenue from all sources, including interest, being £177,000. In the second half of the year to December 17, the estimated railway receipts, as published, show an increase of approximately £500,000 over the corresponding period of the previous year, and the estimated dock receipts a decrease of about £30,000, and the gross receipts from all sources for the full year are therefore not likely to exceed those of 1932.

So far as expenditure is concerned, there is no justification for the optimistic estimates which have appeared in the Press during recent months of the further savings effected by the railway companies during the past half-year. Additional traffic must entail increased operation expenses, and as the comparison is being made with a period in which very large savings were made, further large reductions in expenditure cannot reasonably be anticipated. The introduction of Summer tickets at reduced rates, and the exceptionally fine weather experienced during the summer months, resulted in a slight increase in our passenger train receipts, but the greater number of passengers carried involved the running of more train mileage, and the use of additional rolling stock. Similarly, the increase in merchandise traffic meant that extra staff had to be employed in handling it, and in making good the increased wear and tear of rolling stock and permanent way.

While we can look forward with some confidence to a further improvement in trade during the year 1934, it is well to remember that a good deal of leeway has still to be made up before the prosperity of the railways is restored to its former level.

During recent years, although strenuous efforts have been made to effect economies in all directions, attention has at the same time been given to the provision of improved facilities for the public and for the development of trade. Particulars of the many large schemes undertaken by the Company under the Development Act, 1929, have been published from time to time in this magazine\* and also in a special supplement of THE RAILWAY GAZETTE on December 8. There can be no doubt that the wise policy of the Directors in undertaking, during a period of acute depression, such an extensive programme of improvements covering all sections of railway and dock operations, will be fully justified. Of the thirty-five separate schemes approved by the Government, thirty-one have been completed, and have already proved to be of great assistance in the more expeditious and economical working of our traffic.

Despite the many working difficulties with which we have had to contend during the past year, a further improvement in operating efficiency was effected. Our statistical records show that, compared with 1932, the average

\* The Great Western Railway Magazine, in which this message was published.

speed of our passenger and freight trains was increased; more mileage was obtained from the locomotives in use, and a greater number of ton-miles were worked per train and engine hour.

The past year witnessed many other developments which are likely to have an important influence upon the future of the railways. The scheme for the pooling of the receipts from all traffic competition between the Great Western, London Midland & Scottish, and London & North Eastern Railways, and a pooling arrangement with the London Passenger Transport Board are now in operation. The Road-Rail Traffic Bill received Royal Assent on November 17, and the acquisition by the four main line railway companies of the well-known firms of Carter Paterson and Pickfords marks a further step towards securing co-ordination of road and rail services.

To all members of the staff I would like to take this opportunity of conveying my appreciation for the continued loyal support and co-operation which they have given me during the past year. I am confident that they will spare no effort to obtain for the Company its full share of the additional traffic which the improvement in trade should bring about, and that there will be no relaxation of their efforts to maintain the Company's high reputation for efficiency and courtesy.

#### LORD ASHFIELD, Chairman, London Passenger Transport Board

The year that has just drawn to an end has been the most eventful in the history of the passenger transport system of London. It has seen the birth of a new organisation, which has brought together as a single financial and operating unit all the underground railway, omnibus, tramway, trolleybus, and coach undertakings in the London area under the general title of London Transport. It is the largest organisation of its kind, and it serves the largest urban aggregation of people in the world. For the first time, too, a complete and effective co-operation has been established between the suburban services of the main-line railway companies and all other forms of passenger transport in the London Passenger Transport Area. All are now united in the gigantic task of serving the travelling public of London.

The Board's motto is "Strong for Service," and it is very gratifying to record that the appeal which I made on behalf of the Board on July 1, 1933, for the co-operation and goodwill of the staff has been so cordially received, and

so willingly acted upon, that it has been possible to effect the transfer of all the constituent undertakings to the Board without the slightest interruption to the transport services provided for the public. By continuing to give us their support and encouragement, the travelling public have shown their appreciation of our combined efforts.

To provide for the travelling needs of London's public, and to meet the demands of an increasing population in an ever widening area for new and improved transport facilities, is a great and inspiring task, and I am confident that every member of our great organisation can be relied upon not only to maintain but also constantly to improve our high standard of public service. We begin our task at the start of the New Year encouraged with the thought that trade and industry generally are on the up-grade, and this causes me to take especial pleasure, through the pages of *Pennyfare*, our new staff magazine, to wish you one and all, and the members of your families, a happy and prosperous New Year.

## RAILCARS IN ARGENTINA

*The Buenos Ayres & Pacific Railway, after trying out a four-wheel petrol railcar, has recently built a bogie car on the same principle*

**T**HE Buenos Ayres & Pacific Railway, in response to a demand for a railcar suitable for working branch lines with insufficient traffic to warrant the running of steam trains, designed and built in 1932 a four-wheel car having seating accommodation for 34 passengers. The centre exit and ample gangway space allow of the rapid entraining and detraining of passengers. As this vehicle was intended to work as a rail omnibus stopping at level crossings, the steps were so arranged that passengers could enter either from the rail level or from the platform at a station.

The vehicle has duplicate driving compartments. The driving unit is a Leyland E/11 "Lioness" six-cylinder petrol engine, with overhead camshaft and dual ignition, and develops 89 h.p. at 1,700 r.p.m., but is capable of being run up to 2,200 r.p.m. without danger. The rail speed corresponding to the normal engine speed of 1,700 r.p.m. is 37 m.p.h. The cylinders are 4½ in. bore by 5½ in. stroke. The gearbox is of the four-speed type, and is arranged in one unit with the engine. The drive from the gearbox is taken through the medium of an intermediate cardan shaft to a reversing gearbox, whence it is carried by another Hardy Spicer cardan shaft to the worm drive on the driving axle. The gearbox ratios are 1 to 1, 1.6 to 1, 2.77 to 1, and 4.42 to 1, and the overgeared ratio of the intermediate gearbox is 1.15 to 1; the final drive ratio is 5.5 to 1.

The engine, with its gearbox, the intermediate cardan shaft, and the reversing gearbox are all carried in a special sub-frame within the main underframe. This sub-frame is mounted on rubber pads on the main underframe. There is no metallic connection, this feature having been provided with a view to damping out the vibrations of the engine and gearing. The main and sub-frames are both constructed on rolled-steel sections, and the arrangement of the sub-frame is such that it permits of easy withdrawal of the engine for overhaul.

In order to obtain the desired speed at rail, it was found necessary to incorporate an over gear ratio into the intermediate or reversing gearbox, in which all component parts were heat-treated in Wild-Barfield electric furnaces and finish-ground to close limits. All the gearbox shafts run in ball bearings. The final drive worm has a reduction ratio of 5.5 to 1, the worm being carried on ball bearings, while the casing rides on taper roller bearings and is readily removed for examination purposes. The phosphor bronze worm is bolted to a flange formed on the axle, and a spring loaded torque reaction arm extends backwards from the worm casing.

The solid disc wheels are 3 ft. in diameter, and are identical for both free and driving axles. The wheel disc is bolted to a centre secured to the axle, and is so arranged that it can be speedily removed to allow of the worm wheel on the driving axle being changed. The axles run in SKF self-aligning roller bearings.

The car is fitted with vacuum brake equipment and a screw hand brake. A vacuum of 15-17 in. is maintained by a small exhaustor driven off the transmission at half engine speed when running, and a relief valve is provided to cut in at 18 inches. The brake control valve is so arranged that if necessary, the engine can be used as a vacuum pump to increase the vacuum at the moment of

braking, somewhat similarly to the Servo brake arrangement, and the car can be brought to rest within 19 seconds in 180 yards from a speed of 44 m.p.h.

For engine cooling the car is equipped with a radiator slung below the body at each end directly behind the cow-catcher. There is a petrol tank of 45 gallons capacity and the fuel consumption in service, with frequent stops and under adverse weather conditions, is 8.2 m.p.g. The autovac system of petrol feed is used between carburettor and tank.

The body, which is arranged as a separate unit from the underframe, is built up from metal-faced plywood panels for the exterior with ordinary plywood panels as an interior lining. To maintain coolness in hot weather, ample air space has been provided between the outer and inner roofs. The flooring of the car has two layers of wood with cork between. The bodywork of the car sits on rubber pads in the same manner as the engine sub-frame, the result being a very smooth-riding two-axle vehicle. The windows are of a light wood-framed type, with a positive lock to hold them in any position, while the windows of the driver's compartments are each provided with a horizontally-hinged portion and automatic motor-car type windscreen wipers.

Electric lighting for the interior of the coach and electric head and tail lights, have been installed. The headlights must, in accordance with Government regulations, illuminate the track for a distance of 220 yards.

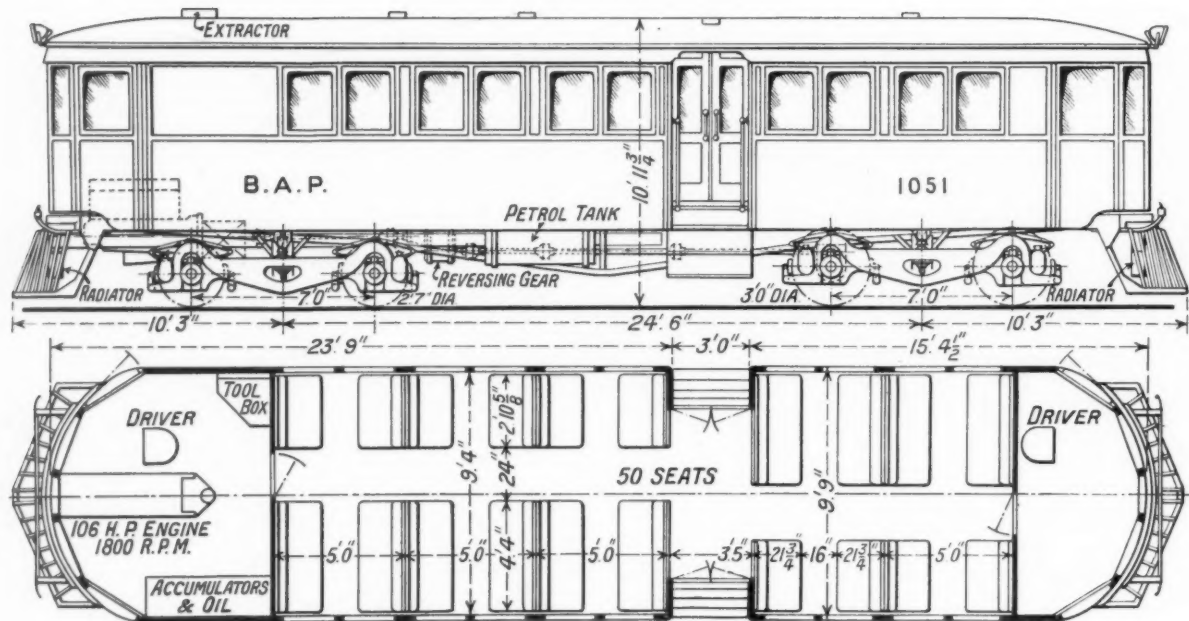
In the arrangement of the engine controls, provision has been made so that gear changing and reversing operations can be effected only from one end at a time, and further to obviate any danger of tampering with controls by unauthorised persons, the driver's seat has been constructed in such a way that, when not in use, it swings forward and prevents the clutch and accelerator pedals being touched. Sanding is supplied to all wheels, thus allowing for both starting and braking under favourable circumstances. To simplify the design tubular brake hangers were used as a medium for conveying the sand to the rails.

### A Second and Larger Car

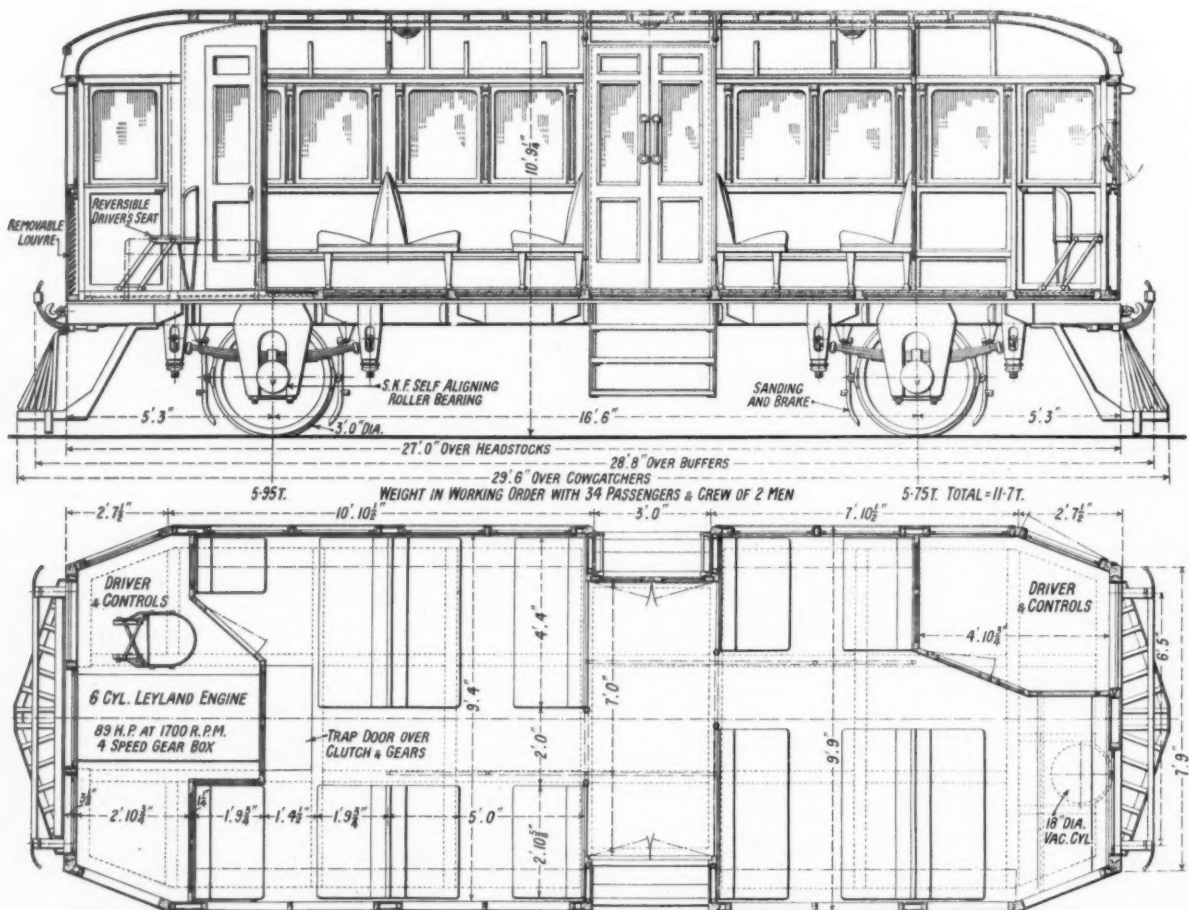
The car has now been running regularly and for some time between Rufino and Buchardo or between Buchardo and Cañada Verde and the monthly mileage has averaged 3,100. So successful have been the results achieved with this car that a larger car of similar type, embodying the experience gained with the experimental vehicle, was recently put into service in the Mendoza district. This car, like the first one, has been built in the company's workshops at Junin to the designs of Mr. R.E. Kimberley, Chief Mechanical Engineer. It has seating accommodation for 50 passengers, is of the double bogie type, and works to a timetable with which, on a run of 70 miles, 27 minutes are gained on the steam service, although six additional stops are made. The fare charged is roughly 80 per cent. of the ordinary second class fare. On Sundays and holidays cheap excursion tickets, which have proved very popular, are also issued. The accommodation, both as regards space and seating, is only slightly inferior to standard first class on Argentine railways.

A petrol engine was again chosen for this vehicle, a Leyland E.17 type engine being adopted. This engine

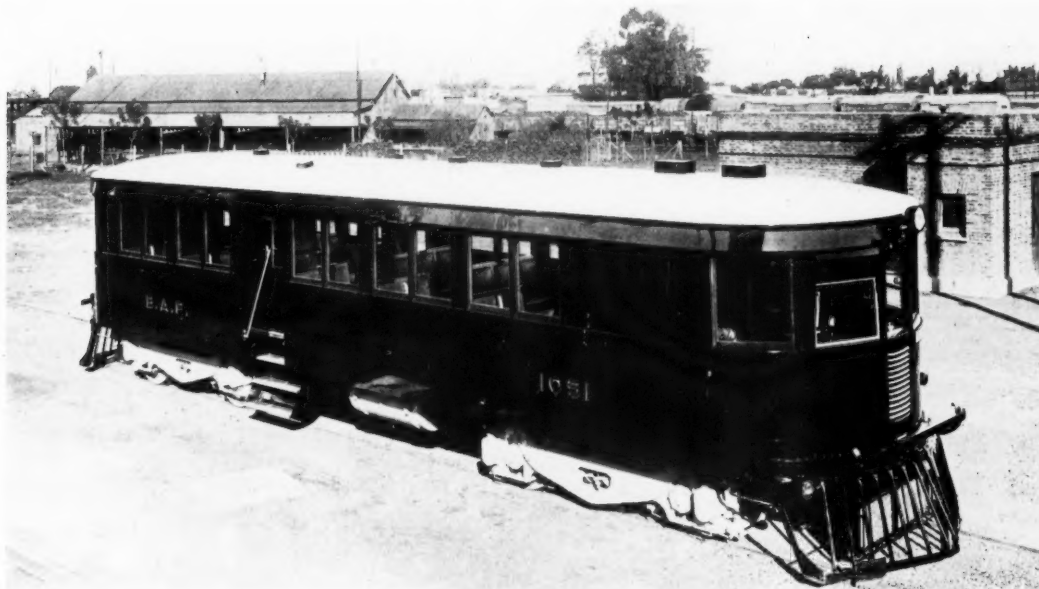




Bogie Leyland-engined railcar, lately built by the Buenos Ayres & Pacific Railway



Leyland-engine petrol railcar car for branch line service, Buenos Ayres & Pacific Railway



*Latest type of bogie petrol Leyland-engined railcar, Buenos Ayres & Pacific Railway, which is modelled largely on the earlier four-wheel car below*

is interchangeable with that fitted in the experimental car, although the power developed is greater, being 106 h.p. at 2,000 r.p.m. As the engine is operating at an altitude of 3,000 ft. above sea level, the cam shaft has been specially arranged to give additional lift to the valves to compensate for the drop in atmospheric pressure. The scheduled operating speed of the car is so fixed that the engine will seldom be called upon to work at more than 1,700 r.p.m., corresponding to a speed of 40 m.p.h.

The engine is cooled by two radiators at each end of the coach, and the temperature of the water is controlled by a thermostat. To avoid any risk of over-cooling in

winter, a connection is provided which cuts off the feed to the radiator distant from the engine, but to avoid any danger of freezing in the pipes, a small hole is provided to permit a trickle of water to pass and thus maintain circulation in the system. The petrol tank, of 45-gallon capacity, with autovac feed, provides sufficient petrol for about 250 miles. In actual service, the consumption works out at 5.6 m.p.g., but on long, non-stop runs this figure is much improved upon.

Like the first car, either-end drive has been provided with similar safeguards. The drive, also arranged similarly to the former car, is on one axle of the driving bogie.



*Earlier four-wheel Leyland-engined railcar, Buenos Ayres & Pacific Railway, which has for some time been running successfully*

Both axles of the driving bogie are the same; so that should the drive on to the second axle be found necessary at any future date, the worm wheel and gear can readily be assembled and the two axles connected up by cardan shaft.

The good results obtained in the first car by the use of a special sub-frame for the engine and transmission led to the adoption of the same system in this unit, with equally satisfactory results, and the body mounting is also similar.

In deciding on a bogie type car, safety was the primary consideration, but easy riding was of almost equal importance, and in the design of the bogie, lightness and ample springing had to be combined. As the conventional type of carriage bogie and springing was not suitable, the bogie adopted is of plate construction, with full elliptic springs arranged over the self-aligning roller axle boxes. The latter, which are interchangeable with those on the first car, are carried on circular guides located between the two plates of the bogie frame. The conventional type of bolster not being possible of adoption, two brackets on the main frame transfer the weight of the underframe and body to a helical spring mounted on a spherical seat on the bogie structure, through the medium of a vertically disposed spring link. A bogie centre, as generally understood, is not employed; a transverse slot being provided in a bogie cross stretcher in which a pin, forming part of an underframe cross member, can slide transversely and vertically.

The driving wheels are 3 ft. diam.; and those of the carrying bogie 2 ft. 7 in. diam. This difference allows the engine and transmission to be located lower in the underframe. The wheels are of the disc pattern, and the disc is bolted to a centre which can readily be removed from the axle to facilitate the removal of the worm wheel as in the former car. The riding qualities of the bogie are all that could be desired. Sanding gear with vacuum-operated valves are also incorporated in the bogie equipment.

Double clasp brakes are fitted to all wheels of both bogies, each bogie being provided with an independent vacuum brake cylinder built into the structure. The

standard type of vacuum cylinder, besides being too heavy for the class of vehicle, occupied too much space, and a specially light design, using the standard diaphragm, has been manufactured for the car in the company's workshops.

### Brake Trials

A large capacity vacuum reservoir is incorporated as part of the braking system. The brake power of this car was amply demonstrated on its first trial trip between Mendoza and Eugenio Bustos when, on rounding a very sharp curve at approximately 25 m.p.h., a man was seen to throw himself on the track some 40 yd. in front of the car. The vehicle was brought to rest alongside the would-be suicide without the passengers being aware that an emergency brake application had been effected.

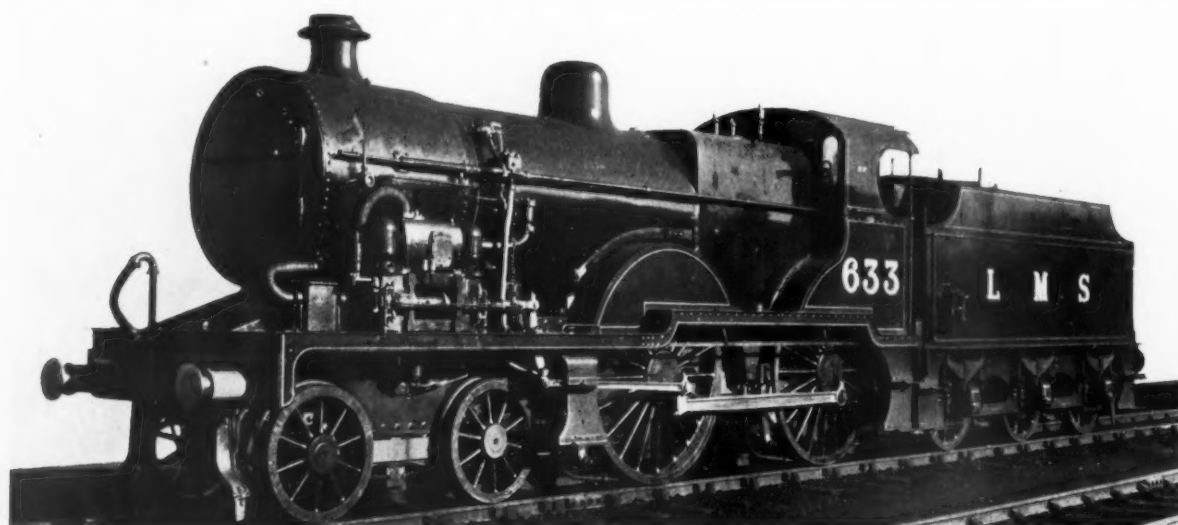
During trials made before handing the vehicle over for service, the Mechanical Department of the railway has found that the car could be brought to rest in 13 sec. from a speed of 40 m.p.h. in a distance of 135 yd. The acceleration was found to be 0.5 m.p.h. p. sec. up to a speed of 25 m.p.h. The maximum speed noted on these tests was 54 m.p.h., under which condition the cooling of the engine proved quite satisfactory.

The brake layout is so arranged that the engine can be utilised to create a vacuum, if desired, gauges with double indication being provided for this purpose. The use of the engine for this purpose would be necessary only in case of failure of both cylinders of the vacuum pump. Hand brake equipment, operated by the normal type of screw apparatus is applied to both bogies.

### The Body

The 50 passengers are accommodated on upholstered back-to-back seats. The coach is illuminated by electricity; while the equipment includes powerful headlights, tail-lights and dashboard lighting.

The exterior of both railcars are bright red picked out in black. Light-weight parcel racks are provided, and there is ample space below the seats for hand luggage. The cheap fare schedule ruling for this type of service does not permit of the free carriage of heavy baggage.



*L.M.S.R. standard 4-4-0 Class 2 passenger engine, experimentally fitted with the Dabeg feed-water apparatus. A second engine is to be similarly fitted in the near future in connection with experiments being carried out under the supervision of Mr. W. A. Stanier, the Chief Mechanical Engineer*



## The late Viscount Churchill

Viscount Churchill, G.C.V.O., Chairman of the Great Western Railway Company, who died suddenly from pneumonia, early on Wednesday morning, after a short illness, was born on October 23, 1864. A godson of Queen Victoria, he was one of her Pages of Honour from 1876 to 1881, and later, from 1889 to 1892, was a Lord in Waiting. After Eton and Sandhurst Lord Churchill served with the Coldstream Guards from 1884 to 1889. In 1886 he succeeded his father as Baron Churchill. He was Lord Chamberlain at the Coronation of King Edward VII and was Master of the Robes at the Coronation of King George V. From 1900-1901 he was Master of the Buckhounds, and latterly was King's Steward of the Royal Enclosure at Ascot. In 1902 he was created a Viscount. Lord Churchill's first direct connection with railways came about in 1905 when he joined the Board of the Great Western Railway Company, and he succeeded the late Mr. Alfred Baldwin as Chairman in 1908. In that office he served longer than any other Chairman since the incorporation of the company nearly 100 years ago.

Although the policy of constructing cut-off lines to South Wales, to the West of England, and to Birmingham and the North was inaugurated before Lord Churchill succeeded to the Chairmanship, he utilised to the full the advantages which the new direct lines gave to the company in the shape of faster and more numerous trains, and the greater punctuality which has been for many years past such a valuable asset. Consolidation and improvement all round, to the advantage of the travelling and trading public, rather than extension of territory, has been the policy of the company under Lord Churchill's regime, and this has been particularly the case since the amalgamations and absorptions effected under the Railways Act, 1921. It is due largely to Lord Churchill's wise guidance that the Great Western has so successfully overcome the troubles of the period since the War and has been able—alone of the group railways—to maintain the full trustee status of its prior stocks. He fully realised that it was the duty of a Board to direct and not to interfere in details, and his generous encouragement of the staff gave them initiative which has continued to carry the railway forward to yet greater efficiency. In anticipation of actual requirements and in the expectation that, when trade revives, there will be increased demands for railway transport facilities of all kinds, the Great Western Company, taking advantage of the assistance afforded by the Development (Loan Guarantees and Grants) Act,

1929, embarked on a programme involving a total expenditure of approximately £8,000,000 spread over five years and covering all sections of railway and dock operations.

Lord Churchill was Chairman of the Railway Companies' Association from 1920 to 1922. His term of office included the extremely critical period culminating in the passage of the Railways Act, 1921. To his diplomatic skill, courtesy, and hard work was largely due the re-shaping of the measure so as to make it generally acceptable to the railway companies, their employees, and the public. In recognition of his services in this respect, the Railway Companies' Association presented him in 1925 with his portrait in oils by Sir William Orpen, R.A. He again held the Chairmanship of the Association during 1931 and 1932. In May last year he was presented by his co-Directors with a George II salver to mark the 25th anniversary of his election to the Chairmanship of the Great Western Railway Company. On that occasion reference was made to the distinguished services which Lord Churchill had rendered not only to the Great Western Company, but also to the railway industry generally. He was constantly in touch with members of Parliament when measures affecting railways were in progress.

Lord Churchill's addresses to shareholders at the annual general meetings of the Great Western Railway Company were always illuminating and

full of interest. He treated questioners and complainants with courtesy and good humour, and even in bad times the meetings always ended in an atmosphere of goodwill. He was most assiduous in his attention to his duties, and was to be seen at Paddington nearly every working day. Always most approachable he invariably maintained the most cordial relations with his staff, who were all devoted to him. During his Chairmanship he had experience of no less than five General Managers:—the late Sir James Inglis, the late Mr. Frank Potter, the late Mr. Charles Aldington, Sir Felix Pole, and Sir James Milne, and he was proud of the fact that they were all Great Western trained.

Lord Churchill was also Chairman of the Fishguard & Rosslare Railways & Harbours Company, and of the British Overseas Bank Limited. In addition he was a Director of the Grand Union Canal Company, of the Peninsular & Oriental Steam Navigation Company, and of the British India Steam Navigation Co. Ltd. He is succeeded in the Viscounty by his son, the Hon. Victor Alexander Spencer.



*The late Victor Albert Francis Charles Spencer,  
First Viscount Churchill*

Chairman, Great Western Railway Company, 1908-1934

## SPRAY CLEANING OF LOCOMOTIVES

*Apparatus installed at the King's Cross locomotive depot, L.N.E.R.*

THE diagram reproduced below, for which we are indebted to the L.N.E.R., shows the plant installed in the locomotive running shed at King's Cross, London, for cleaning locomotives by the spray or jet method. At present the installation is dealing with the wheels, motion and all parts below the footplate of 96 tank engines a week, the time allowance being three hours per engine per man, representing a saving of three hours on every engine treated. In addition, an incomparably better job is made of the work than can be effected by wiping with oil solvents, which themselves leave a residual film that acts as an adherent base for further accumulation. The effectiveness of the jet is also noticeable at the parts difficult of access by hand cleaning and it facilitates the mechanical examination of such parts besides improving the conditions under which repairs have to be carried out.

Prior to the installation of the present plant experiments were carried out with pumps operated on the rotary principle. These, however, were abandoned in favour of the plunger type of pump owing to the latter's larger clearances and freedom from injurious effects caused by scale in the water. It is found that in the process of jet cleaning the maintenance of high pressures and temperatures is of considerable importance. The water supply of the King's Cross installation is obtained from a hot water locomotive boiler washing out plant and rarely falls below 120 deg. F., when entering the main water tank, and this is large enough to provide an ample reservoir in order to permit of reheating. Reheating is effected by means of an H-shaped perforated grid on the bottom of the tank supplied with live steam from a stationary boiler and, in addition, a perforated steam pipe is fitted in the solution tank to heat the mixture and keep it agitated. All delivery pipe lines throughout the shed are effectively

lagged and every endeavour is made to keep the temperature of the water in the neighbourhood of 200 deg. F., the operators being provided with leather gauntlets and protective clothing.

### The Chemicals Employed

The cleansing agents at present used at the King's Cross depot in combination with the water are soda ash and cleaning oil, though research is still being continued with a view to finding out the best medium for the purpose. It has been definitely proved that a jet of water, however hot and at whatever velocity it may be projected is not in itself sufficiently effective. Owing to surface tensions some chemical medium is necessary to break the attachment of the oil film to the metal surface and this medium may take the form of emulsifying agents such as soaps, sulphonated oils, or alkaline substances like soda ash or silicate of soda.

The use of soda ash in the proportion (to the water) of about 0.3 per cent. by weight has been found very satisfactory in removing grease, whilst being at the same time economical and giving the jet a cutting as well as a dissolving property. This medium, however, leaves a very flat and dry finish for which reason it cannot be used for parts above the footplate. If cleaning oil is added the finish is better, but the cost is correspondingly higher. The possibility of first cleaning the engine with an alkaline solution and then mist-spraying it with undiluted oil to obtain a desirable finish has yet to be tried. In operating the system, sufficient soda ash is dissolved in the mixing tank to suffice for one week's working, and this is then pumped by a semi-rotary hand pump into an elevated solution tank whence it feeds at a regulated rate into the suction line. This rate is adjusted by the setting of a

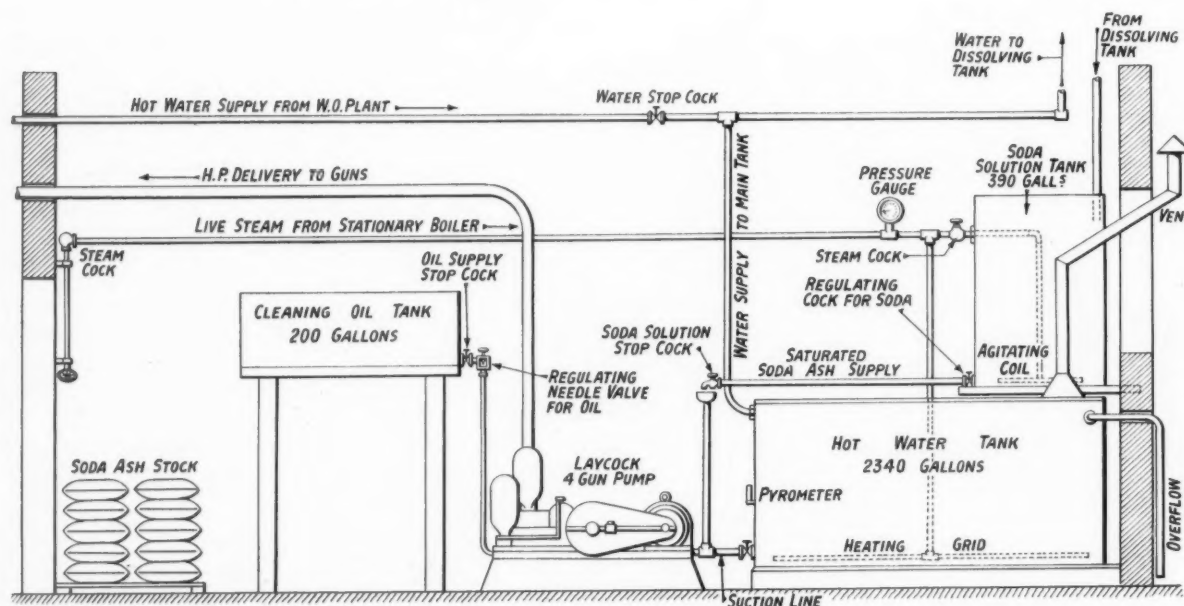


Diagram of King's Cross locomotive spray cleaning plant



*Service plant for locomotive spray cleaning equipment*



*Cleaning jet in operation at King's Cross locomotive shed*

tank cock, a second one being used to shut off the supply when the pump is not operating. The alternative or oil feed to the suction line is similarly controlled by the adjustment of a needle valve. In this way it is possible to obtain at the jets a cleaning solution containing two agents, those at present used being soda ash in the proportion of 0.3 per cent. and Thelson oil 0.06 per cent. by weight. This is forced by a four-gun Laycock electrically driven pump delivering three gallons per minute per gun at a pressure of 375 lb. per sq. in. through an overhead 1½-in. diameter hydraulic pipe line to the seven

points with which the shed is equipped. From these, by means of 50 ft. flexible hose pipes, all the engines on the six roads can be comfortably dealt with.

#### **The Effect on Bearings**

The effect of spray cleaning on the bearings of the locomotives is being very carefully watched and at King's Cross shed the number so treated is graphed against the number of bearings overheated in order to examine the relationship between the two. From the data so far obtained, no increase has been revealed than can be attributed to this method of cleaning.



*Signal demonstration van, L.N.E.R., Southern Area (described on page 26). Left: Miniature lever frame and model junction. Right: General view of model layout*





*Nord Calais-Paris rapide in the Forest of Chantilly. Note the baggage van behind the tender, a universal safety practice on French expresses. On the left is seen a distant signal, called the "palette SEM," and peculiar to the Nord, used to repeat the indications of the following block semaphore. The arm carries a row of mirrors and appears as a bar of light at night.*



*All-steel suburban train passing an automatic stop signal near Lagny. Note the excellence of the permanent way. The rear view is seen of a block semaphore (sémaphore de couverture) at "clear," and above it a distant signal (damier vert et blanc), also at "clear." In the foreground is the cartridge detonating machine.*



*Strasbourg rapide passing Lagny. The cab signalling "crocodile" will be noticed in the foreground. A front view is seen of the block semaphore (sémaphore de couverture), and beside it the distant signal (damier vert et blanc) and absolute stop signal (signal carré), all at "clear" for the opposite line.*

SEE EDITORIAL ARTICLE ON FRENCH RAILWAY SAFETY ON PAGE 5



*New Zealand Government Railways recently-completed "C" class shunting locomotive with welded tank, designed and constructed in the railway shops.*

# RAILWAY NEWS SECTION

## PERSONAL

### NEW YEAR HONOURS

#### Baron

The Rt. Hon. Sir Evelyn Cecil, G.B.E., a Director of the Southern Railway Company.

#### Baronets

Major Ralph George Campbell Glyn, M.C., M.P., D.L., a Director of the London Midland & Scottish Railway.

Mr. Percy John Pybus, C.B.E., M.I.E.E., M.P., Minister of Transport 1931-33.

M.Inst.C.E., Engineering Inspector, Ministry of Transport.

Mr. Andrew Gemmell, Heatly & Gresham, Engineers, Calcutta.

Mr. James Edward Ryall, M.B.E., Assistant Inspector-General, Government Railway Police, Punjab.

Alderman Edward Malachi Dyer, J.P., Chairman of the Port of Bristol Authority.

#### M.B.E.

Mr. William Beatty, Sub-Assistant Auditor, Bombay, Baroda & Central India Railway.

Mr. Francis Fredrick Lean, retired

the Running Department of the North British Railway at Cowairs, and in 1905 was appointed chief of the technical staff of Messrs. Livesey, Son & Henderson. During the War Mr. Cockburn served in the Royal Engineers, being gazetted out with the rank of Lieut. Colonel. He was awarded the O.B.E. in 1918 for services at the Admiralty. In 1920 he became General Manager of the carriage and wagon works of Cammell Laird & Co. Ltd., at Nottingham, and in 1930 was appointed to a similar position with the Metropolitan-Cammell Carriage, Wagon &



**Mr. T. R. Dester,**

Appointed General Traffic Manager, Associated British Railways Inc. Travel Bureau, New York



**Mr. G. E. Cockburn.**

General Manager, Commercial, Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd., Birmingham, 1930-33



**Mr. F. J. Hills.**

Appointed London Manager, Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd.

Sir William McLintock, G.B.E., C.V.O., Financial Adviser to the Ministry of Transport on the London Passenger Transport Bill.

#### Knight Bachelor

Mr. Hugh Augustus Macnish Hannay, V.D., Agent of the East Indian Railway and Chairman of the Indian Railway Conference Association.

#### K.B.E.

Mr. Follett Holt, Chairman of the Buenos Ayres Western, Buenos Ayres Great Southern, Entre Rios and Argentine North Eastern Railways and of the Pullman Car Co. Ltd.

Mr. Follett Holt is Chairman of the Committee Representative of Holders of Frozen Peso Balances in Argentina and has rendered conspicuous public and political service in regard to Anglo-Argentine relationships.

#### O.B.E.

Mr. William Gauld, Assistant Government Director of Indian Railway Companies, India Office.

Captain Christopher Gibbs Mitchell,

Locomotive Foreman, Jodhpur Bikaner Railway.

#### British Empire Medal

Driver William Gilbertson, L.M.S.R., who was in charge of the Royal Scot during the American tour.

Abdel Wakid Mohammed Nur, Stores Checker, Sudan Railways.

Mr. T. R. Dester, hitherto L.M.S. Representative in the United States, has now been appointed General Traffic Manager of the Associated British Railways Inc. Travel Bureau in New York, with effect from January 1. A description of the aims of the bureau will be found on page 26.

Mr. G. E. Cockburn, who, as announced in the December 29, 1933, issue of THE RAILWAY GAZETTE, retired from the position of General Manager (Commercial) at the Birmingham Works of the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd., on January 1, was apprenticed to Kitson & Company in 1892. In 1897 he joined

Finance Co. Ltd., at Birmingham, from which he has just retired.

Mr. F. J. Hills, who, as announced in last week's issue of THE RAILWAY GAZETTE, has been appointed London Manager of the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd., was educated at the Roan School, Greenwich. He entered the service of the Bristol Wagon & Carriage Works Co. Ltd., in 1895, and held the appointment of London Manager for that firm from 1913 to 1920. In the latter year he joined the London staff of the Leeds Forge Company, with which company the Bristol concern was then amalgamated. Three years later, after the merging of the Leeds Forge Co. Ltd., with Cammell Laird & Co. Ltd., Mr. Hills continued in his appointment on the London staff, and on the linking up of Cammell Laird's rolling stock interests with those of Vickers Limited, his service continued with the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd.

Mr. Henry Charles Allen, who, as announced in *THE RAILWAY GAZETTE* of December 22, has resigned the Chairmanship of the Buenos Ayres Great Southern Railway, has had a long connection with that company, and is one of the best known and most popular members of the Anglo-Argentine community in London. Born in 1856 and after training with Deloitte, Plender, Griffiths & Co., accountants, Mr. Allen occupied a position in the London office of the Central Argentine Railway from 1876 to 1883. He then became

Board of that and its allied railways. On the reorganisation of the Buenos Ayres Midland Railway in 1908, Mr. Allen was appointed by the B.A.G.S. Board, one of its representative Directors. In 1910 he retired from the position of London Manager and Secretary of the B.A.G.S., on being elected a Director of that company, and was appointed Deputy Chairman in 1916, when he also became a Director of the B.A. Western Company. He was, moreover, elected a Director of the Great Western of Brazil in 1911

the staff of Sir Alexander Rendel, Consulting Engineer, and two years later accepted an appointment as an assistant in the Locomotive Department of the Buenos Ayres & Rosario Railway, eventually rising to be Acting Locomotive Superintendent of that line. In 1897 Mr. Follett Holt was appointed General Manager and Chief Engineer of the Great Western Railway of Brazil, returning to Argentina three years later to take up a similar position on the Entre Rios Railway. There he designed and built the train-ferry



*Mr. Henry Charles Allen,*

Who has resigned the Chairmanship of the Buenos Ayres Great Southern Railway on account of advancing years after long association with the company



*Mr. Follett Holt,*

Appointed Chairman of the Buenos Ayres Great Southern Railway, and recipient of the honour of K.B.E. in the New Year list

Registrar and Accountant of the B.A. Great Southern and in 1890 was appointed Secretary of the Central Uruguay Railway of Monte Video, retaining, however, his connection with the B.A.G.S. as Advisory Accountant and Registrar. In 1892 he became Secretary of the latter railway, and, in 1893, took over the duties hitherto performed jointly by the Managing Director of both the B.A.G.S. and Central Uruguay systems, being thus constituted the chief executive officer in London for the two companies. In recognition of the increase in the scope and extent of the duties entrusted to Mr. Allen, he was appointed London Manager as well as Secretary by the B.A.G.S. Board in 1901. He retired from the Secretaryship of the Central Uruguay in 1903 on his election to the

and of the Midland of Uruguay and of the Uruguay Northern Railway Companies in 1919. It was in 1924 that Mr. Allen was appointed Chairman of the B.A.G.S. Company, the post he now resigns due to advancing years.

Mr. Follett Holt, M.Inst.C.E., who has been elected Chairman of the Buenos Ayres Great Southern Railway Company as from January 1 and has received the New Year honour of K.B.E., is the fifth son of the late Mr. Robert Hallett Holt, the Land Titles Commissioner for England. He was educated at Merchant Taylors School and then studied at the City and Guilds Engineering College before serving his time in the Nine Elms shops of the old L.S.W.R. In 1887 he joined

system of the railway. In 1910 he returned to London on being elected a Director of that company, though subsequently he has paid numerous extended visits to and has kept in close touch with South America. Early in 1915, Mr. Follett Holt went to the War Office, joining Mr. G. M. Booth in organising shell production, subsequently becoming a settler under the Munitions Levy Act and eventually a Financial Adviser to the Coal Controller. In 1916 he induced the Government to instal the Channel Ferry and early in 1918 became Commercial Member of His Majesty's Diplomatic and Commercial Mission to the South American Republics. Mr. Follett Holt is Chairman of the Buenos Ayres Western, the Entre Rios and Argentine North Eastern companies, as well as of



the Buenos Ayres Great Southern, and of the Pullman Car Co. Ltd., of which he is also Managing Director. He is, moreover, a Director of the Southern Railway, Barclay's Bank, the Bank of London & South America, and the Cordoba Central, Bahia Blanca & North Western, Great Western of Brazil and Central Uruguay Railways. He was also Chairman of the London Executive Committee of the British Empire Trade Exhibition held in Buenos Aires in 1931, and in his younger days was for three years a member of the winning team of the Polo Championship of the River Plate.

The Rt. Hon. the Lord Forres, a Director of the Central Argentine Railway, arrived in Buenos Aires on November 18 on a business visit.

The Rt. Hon. Viscount Grey of Fallodon, K.G., P.C., late Director of the L.N.E.R. and sometime Chairman of the old N.E.R., left estate valued at £123,791 (£93,904 net).

Lieut.-Col. F. C. C. Balfour, C.I.E., C.B.E., M.C., Representative of the Peruvian Corporation Limited, has returned to Lima after some months leave in Europe and the United States.

Geheimer Oberbaurat Alphons Hoogen, who retired on November 1 from the Directorship of the Berlin Civil Engineering and Transport Museum, was previously a Signal Superintendent and a member of the Prussian Block Working and Signalling Committee. In 1909 he took charge of all safe working and signalling questions at the Prussian Ministry of Public Works, and on his retirement in 1923 was appointed Director of the Museum.

Ing. Cesar Mereuta, who for ten years has been General Manager of the Roumanian State Railways, has now been appointed Chairman of the Railway Board in succession to M. Mladoveanu. The appointment of a prominent railwayman has been hailed by the Roumanian press as an endeavour to secure continuity in the affairs of the State Railways, for the position has hitherto been a political one, and Ing. Mereuta is the ninth holder of the office since the war.

M. Marcel Peschaud, who has been General Secretary of the Comité de Direction des Grands Réseaux de Chemins de Fer, since it was formed some years ago to co-ordinate the operation of the French railways, has now retired from active service and has been granted the title of Honorary General Secretary. He is succeeded by M. Grélat, who has been Assistant General Secretary since the formation of the committee. M. Peschaud has been closely associated with the history

of the French railways for the past twenty-five years. He was formerly General Secretary of the Paris-Orleans Railway Company, and is a well-known writer on French railway matters. Quite recently he published a brochure on the rail and road problem in France and in foreign countries and had previously attracted public attention by his study of the rôle of the railways in war time.

#### MR. CHURCHWARD'S FUNERAL

The funeral of the late Mr. G. J. Churchward, formerly Chief Mechanical Engineer of the G.W.R., took place at Swindon Parish Church on December 22. The route followed by the procession from his home was lined with thousands of Swindon works employees, who had been allowed time off for the occasion.

The Bishop of Barking gave the address and performed the committal rites, assisted by the vicars of Swindon and of St. Phillips, Upper Stratton (a former apprentice under Mr. Churchward), the church being crowded. The address closed with the following tribute to Mr. Churchward: "So we take leave of George Jackson Churchward. His influence will still live among us. You are the richer for having had him among you for nearly 60 years. You cannot all emulate his achievement, for there are diversities of gifts in human life, but you all can emulate his devotion to duty and his interest in the service of his fellow men."

Among those present were the Mayor, Deputy Mayor and aldermen, representing the town of Swindon, and the chief mourners were Mr. J. Kelyack (executor), Sir Cuthbert Wallace, Mr. C. B. Collett (Chief Mechanical Engineer, Great Western Railway), Mr. W. A. Stanier (Chief Mechanical Engineer, London, Midland & Scottish Railway), Mr. H. N. Gresley (Chief Mechanical Engineer, London & North-Eastern Railway), Mr. J. Clayton (representing Mr. R. E. Maunsell, Chief Mechanical Engineer, Southern Railway), and Messrs. F. Northover, L. Mildenhall, T. Pope and J. Hatherall (representing the domestic staff at "Newburn").

The Swindon G.W.R. Works were represented by Messrs. J. Auld (Principal Assistant to the Chief Mechanical Engineer), F. W. Hawksworth and J. R. W. Grainge (Assistants), R. G. Hannington (Locomotive Works Manager), K. G. Cook (Assistant Manager, who also represented the Junior Engineering Society), E. J. T. Evans (Carriage Works Manager), H. F. V. Dawson (Assistant Carriage Works Manager), C. Crump (former Running Department assistant), S. J. Smith (Chief Draughtsman), H. Arkell (Chief Material Inspector), W. A. Yates (Chief Correspondence Clerk to the C.M.E.), F. Bailey (Accounts Department), and S. A. Dyer (Chief Mechanical Engineer's personal staff).

Sir James Milne, General Manager of the G.W.R., was unable to be present, but Mr. J. L. Edwards represented the Chairman, Directors and chief officers.

Others present included Messrs. J. W. A. Kislbury (Divisional Superintendent, Old Oak Common), J. Armstrong (Divisional Superintendent, Worcester), R. H. Grey (Divisional Superintendent, Wolverhampton), S. R. Jones (Works Manager, Caerphilly, representing Mr. C. T. Hurry Riches, of Cardiff Valleys Division), E. Ford, O.B.E. (former Chief Goods Manager of the G.W.R., representing the President and members of the Retired Railway Officers' Society, of which Mr. Churchward had been a member since 1921), F. C. A. Coventry (Paddington), W. E. Baines (Newport), C. T. Cuss, W. Bartlett and A. R. Plaister.

#### INDIAN RAILWAY STAFF CHANGES

Mr. G. T. Tait, Central Publicity Officer, Indian State Railways, on return from leave, resumed duty on November 8.

Mr. W. H. Burnand, on return from leave, has been appointed Chief Operating Superintendent, E.I.R., as from October 21, Mr. D. M. S. Robertson, who was officiating in that post, reverting to his substantive appointment of Divisional Superintendent on the same date.

Mr. G. S. Darby, Traffic Manager, Burma Railways, on return from leave resumed duty on November 11, Mr. R. T. Power, Officiating Traffic Manager, reverting as Deputy Traffic Manager.

Mr. A. J. Cracknell, Deputy Chief Mechanical Engineer (Locomotive), G.I.P. Railway, has been granted 10 months' leave from November 11 last.

Mr. W. R. FitzGerald has been appointed Deputy Manager, Works, B.N.R.

Mr. A. L. Carroll has been appointed Superintendent of Maintenance (East), B.N.R.

Mr. H. M. Davies, V.D., has been confirmed as Deputy Chief Mechanical Engineer, E.I.R., as from November 2, and was posted as Deputy Chief Operating Superintendent, Power, on that railway on the same date.

Mr. H. T. Martin, Chief Engineer, A.-B.R., returned from leave on November 7, and assumed charge from Mr. F. Salberg, who reverted as Deputy Chief Engineer from the same date.

Mr. R. Lean, Chief Mechanical Engineer, M. & S.M. Railway, has been granted six months' leave as from December 9, Mr. T. Pinder, Deputy Mechanical Engineer, being appointed to act in his place.

Mr. J. Mackinnon has been appointed Deputy Agent N.W.R. as from November 21.

Mr. E. H. Aikman, Deputy Traffic Manager, Transportation, Burma Railways, has been granted leave for ten months as from November 28.

Mr. G. J. Woodhouse, Restaurant Car Superintendent, L.N.E.R., the recipient from royalty of many mementoes and tributes for his excellent catering, is retiring at the end of January.

We regret to record the death, on January 1, of Mr. S. H. Herbert, formerly a Director of the Great North of Scotland; Didcot, Newbury and Southampton; Mold & Denbigh; Isle of Wight Central, and the Stratford-upon-Avon & Midland Junction Railways. He was also Chairman of the Association of Smaller Railways, formed at the time of the negotiations leading up to the Railways Act of 1921, championing the interests of the minor lines subsequently absorbed in the

group companies. He was the son of Mr. G. S. Herbert, sometime Secretary and Manager of the South Eastern Railway, and was a very popular member of the Stock Exchange for some 40 years, about 1886-1926.

Mr. William Noel Green has been appointed Manager of the Salvador Railway.

Dr. T. C. Dalrymple Watt has been appointed L.M.S. Railway Medical Officer for Scotland, and will take up his duties as from February 1.

Messrs. Merz & McLellan, Consulting Electrical Engineers, announce that Mr. Richard W. Gregory has resigned from partnership in the firm, but is retained in an advisory capacity.

It is with regret that we note the death, on December 31, of Lieut. Colonel Henry Holmes, M.V.O., sometime Superintendent of the Line, L.S.W.R. He retired after 39 years' service with the railway in 1916.

We regret to record the recent death of Mr. G. T. Bell, formerly Executive Assistant to the Vice-President in charge of Traffic, Canadian National Railways. Mr. Bell was a frequent visitor to Europe on duty and had many friends in this country.

## Sir Ralph L. Wedgwood

The L.N.E.R. Magazine publishes the following note, together with the subjoined letter addressed by Sir Ralph Wedgwood to the staff of the L.N.E.R. :-

It is common knowledge that our Chief General Manager fell ill in June when he was paying a week-end visit to Cromer. At first the illness did not seem to be serious, but complications supervened and for a time caused the gravest anxiety both to Sir Ralph's family and to the Chairman and Directors of the L.N.E.R. Happily, Sir Ralph made a wonderful recovery and was able to attend the meeting of the L.N.E.R. Board on December 1. Since that date he has been showing all his old interest in everything connected with the company's business and with the affairs of the staff. During "the Chief's" absence many enquiries reached headquarters from all parts of the system, and we therefore have real pleasure in printing below a letter which he has addressed to the Editor.

"Now that I have returned to work once more, I should like, through you, to thank all members of the London & North Eastern staff who have taken so friendly an interest in the progress of my illness. Many of them have written at one time or another to convey their best wishes, and I know that many others have made repeated inquiries about my progress. I have appreciated these inquiries very warmly indeed, and both my wife and I feel very grateful for all the attention that we have received. If there is any pleasure greater than that of being so kindly remembered, it is that of feeling myself back once more and able to take my share again in the work of the railway."

## M. Dautry on the Lagny Disaster

M. Dautry, General Manager of the French State Railways, made a statement to *Le Matin* of December 29. The main points are as follow: "I have no desire to praise, blame or even to make excuses for the systems—a system such as the Est, perhaps the best equipped in France, has no need of such—I wish merely to state facts. In France, it must be frankly admitted, we are exceedingly conservative and it is seldom that we have the courage and financial daring to destroy what exists when it has been proved that something newer and safer would be preferable.

"As regards railways, expenditure on signalling and rolling-stock, like that on station reconstruction, is becoming badly managed and risky, subordinated to other interests. Public opinion, unlike that of other countries, does not support us, failing to realise that the means at the command of railwaymen are far from being always adequate for the task to be performed. People will not realise that here on earth the one economy is human life, as M. Pagaman, who fortunately has been called in to remedy this state of affairs, so truly remarked yesterday. Thus it is that in our signalling, far too many of us, particularly the State Railways, have retained everything used in the earliest days of railways, transforming it, modernising it, but never attaining the safety assured by a thoroughly up-to-date equipment.

"On the State railways, despite all our efforts, it must, alas, be confessed that in 1933, on the 9,134 kilometres comprising the system there are not more than 120 kilometres equipped with automatic block signalling, and 1,900 kilometres are worked with manually-operated block signals dating from the period 1880-1900. 7,000 kilometres, chiefly of secondary lines, still retain the signalling system of 1842, modernised as far as possible, but lacking the block system and possessing only sectional telegraphy.

"Regarding rolling-stock, there was not a single all-metal coach before 1927. The following year 200 were either delivered or on order. To-day the State Railways possess 700 of them, excluding 792 all-metal suburban coaches. As it would require 1,726 all-metal carriages to maintain our express services, I am obliged to use 1,000 wooden ones. This year I asked for credit to purchase 40 new metal coaches, and I had a real fight to get it. In spite of these obstacles, our engineers, railwaymen and staff, who are often faced with tasks beyond their resources, are doing their utmost to ensure the safety of millions of passengers.

"What really effective remedy can you suggest for the situation?"

"We must not demand too great a sacrifice of the country," replied M.

Dautry, "but let us concentrate our energies on things worth while. Of the 45,000 kilometres of lines in France, let us boldly suppress 15,000 kilometres of secondary track, where local conditions warrant such action, and keep only the main arterial lines of France. But these we must equip in the best possible manner and provide more level crossings, more locomotives, more carriages and modern signalling methods.

"When it was seen in the army," concluded M. Dautry, "that muzzle-loading guns were out of date, the troops were given 75's. When it became apparent that hand-pumps were inadequate, we provided our men with steam pumps. One day it will be necessary to renovate our railways and modernise the technique of this old but still workable instrument, its rates, its business methods and its rolling-stock. There, in the future, lies the secret of the solution of railway problems."

THE LAGNY DISASTER.—The number of deaths resulting from the collision between the Strasbourg rapide and the Nancy express near Lagny on the C. de f. de l'Est on December 22, has mounted up to 204. About 80 of the injured remain in hospital. At the judicial inquiry at Meaux criticism was expressed that a slow train should have been despatched immediately in front of a fast, but this was effectively disposed of when it was explained that proper observance of the signalling at Lagny permitted of trains following one another with safety at two-minute intervals. It was announced on Wednesday that six officials of the Est have been charged by the Meaux magistrate with "inattention, imprudence, inefficiency, negligence, and non-observance of regulations." They are MM. Merlin (District Locomotive Superintendent, Paris), Martelot (Assistant Engineer), Montignault (Works Foreman), Mougeot (Inspector), Piéremont (Assistant Foreman), and Caron (Inspecting Mechanic). Charges of culpable negligence have also been laid against the driver and fireman of the Strasbourg rapide. It has been alleged that although a trial run had shown that the cab signalling apparatus on the locomotive was not functioning properly, it was allowed to leave Paris on the night of the accident without the fault being corrected. As a result the signal warning indication in the cab could not have operated.

THE ROYAL SCOT'S AMERICAN TOUR.—Mr. E. J. H. Lemon will give a lecture, illustrated by a film, to the Institute of Transport at 5.30 p.m. on Monday, January 8, at the Institution of Electrical Engineers. Non-members may obtain cards of admission on application to the Institute.

## The Electrical Industry in 1933

Several important electrical engineering developments have been brought to completion and into commercial operation during the past year, the chief being the electrification on the d.c. third-rail multiple-unit system of the Southern Railway main line to Brighton and Worthing. The bulk of the work in connection with this and in connection with the National Electricity Grid, which also became ready for operation during the year, belongs to preceding years, but a small residue belongs to 1933. This residue, together with the work done in other fields, is described by the firms responsible in their latest progress reports. Regarding the future, a note of optimism is struck by the English Electric Company. It being the experience of this company that the electrical industry is usually somewhat late in feeling the effects of revival after a depression, an uptrend in the number of enquiries received and orders placed has been given an encouraging interpretation.

### English Electric Co. Ltd.

The transformer department has been particularly busy in the manufacture of the smaller units for industrial and general distribution purposes, while many large transformers have been installed for taking a bulk supply from the grid. Induction-type voltage regulators have been provided with most of these large units. A number of mercury arc rectifiers have also been supplied, some of these being for traction purposes. Level or over-compound d.c. voltage characteristics are obtained automatically by grid control in a number of these units, and an interesting development is a static type of grid control gear which, for obvious reasons, is now superseding the earlier forms employing rotating machinery.

A considerable number of electric train control equipments have been supplied, a contract for 42 motor coach and 21 trailer coach equipments having been completed for the Danish State Railways' electrification of the Copenhagen suburban lines, together with a repeat order for equipments for seven three-coach trains for the South Indian Railways. All equipments are of the E.E.C. camshaft type, those for Denmark being for 1,500 volts d.c. The most important traction order received was for the electrification of the Warsaw suburban railways. This work will be carried out in conjunction with the Metropolitan-Vickers Electrical Export Company, and will extend over a period of three to four years.

Brisk business has been done in bus and coach bodies, and the company exhibited at the Commercial Motor Show, among other examples of its work, an A.E.C./English Electric Q-type four-wheel electric trolley bus with seating accommodation for 63 passengers. A 200 b.h.p. diesel-electric railcar developed by the company

especially for branch-line working has been in service by permission of the L.M.S.R. on the Warwick-Daventry-Northampton route, and this is now running on the Watford-St. Albans branch line.

### Metropolitan-Vickers Electrical Co. Ltd.

Consequent upon the successful introduction by the Southern Railway, at the beginning of the year, of electric trains on its main Brighton line, an order has been placed for the modernisation of early Southern electric trains to bring them into line with the newer trains as regards main circuit layout, lighting control, and acceleration control. Relative to a totally different system of main line electrification, namely, to that of Kando in which a frequency changer on the train makes a.c. of industrial frequency suitable for operating commutator type traction motors, work on the main order for the Hungarian State Railways has made considerable progress. An interesting development consists in centralising the control gear which was formerly duplicated in the two master controllers, and embodying a new principle of operation in the liquid starter. The first locomotive having the modified control is already on test in Hungary.

Many developments have taken place in the tramway and trolley bus fields during the year, and motors of very moderate weight (from 20.5 lb./h.p. in the 65 h.p. size, to 15.6 lb./h.p. in the 95 h.p. size) are now available for trolley bus propulsion. These motors are wound for regenerative control and a single turn armature winding ensures sparkless commutation.

To combat difficulties from radio interference with electric vehicles a new form of choke has been developed to give protection simultaneously over wave lengths in the region of 300 and 1,500 metres. The standard coil is capable of giving an impedance of 16,000 ohms at some frequency in the medium wave band and 7,000 ohms at some frequency in the long wave band, the exact frequencies at which the maximum impedance is located being capable of adjustment to meet local conditions. The resilient gear-wheel developed by the company for traction purposes about two years ago has succeeded in heavy service beyond all expectations and further sets of gears for tramcars are now being made.

Important railway signal orders have been carried out by the associated General Railway Signal Company, and a new contract has been obtained from the G.W.R. for the re-signalling at Bristol. Work on this has already been put in hand following completion of the power signalling installation at Paddington station earlier in the year. The whole of the Paddington area is now provided with electric signal

apparatus manufactured at Trafford Park, and the change-over was made without any interference with normal traffic.

Apparatus has been supplied in connection with the automatic signalling on the L.N.E.R., for the Gidea Park to Shenfield section of the old Great Eastern Railway. Four tracks have been laid down in place of two on this section and the automatic signalling material consisted of 90 d.c. searchlight signals, 142 a.c. vane track relays, 300 vane line relays and 70 a.c. slow release relays. In addition, 16 model 5A d.c. point machines were supplied together with 60 type W. single unit double lens signals which were used in conjunction with the searchlight signals to provide four-aspect signalling. The apparatus is all housed in welded steel apparatus cases, 110 of these being supplied. 500 transformers of various sizes and types were also supplied together with auxiliary apparatus.

Following on the development of the Type S4 d.c. relay described last year, there has now been developed a two-arm d.c. relay known as the type S2 in which are incorporated all the salient features of design which proved so successful on the type S4. This relay meets the B.S.I. Specifications for d.c. track and line relays and has been developed in answer to the demand from British railways for a two-point high efficiency d.c. relay.

### British Thomson-Houston Co. Ltd.

The report of the British Thomson-Houston Co. Ltd. indicates that the use of electricity is being rapidly extended for all purposes. Among railway orders received was one from the Southern Railway for a further 12,500 kW. turbo-alternator set for service in the Durnsford Road generating station at Wimbledon. Quite a good business was done in this class of work, including the erection of two 75,000 kW. turbo-alternators at Barking power station, and a 67,200 kW. unit, operating with steam at a pressure of 570 lb. per sq. in., at the Battersea station. Welded steel construction has been extensively applied by the B.T.H. Company in the fabrication of turbine sets, more particularly in connection with condenser shells and reduction gear cases. Welded steel gears form another application of welding, and 31 sets of helical gears of this type of construction were delivered during the year to the Greaseproof Paper Company of Dartford.

High-frequency motor-driven blowers for supercharging diesel engines have been given some attention at the Rugby works, and five large sets were supplied to the Premier Gas Engine Company, four of the units running at 5,750 r.p.m. and delivering 2,210 cu. ft. of free air per min. against 1.5 lb. per sq. in. gauge pressure.

High-tension switchgear has formed an important part of the company's production during 1933, and a notable order completed was for 66 kV. oil-



filled metal-clad apparatus, with oil circuit-breakers having an interrupting capacity of 750,000 kVA., for the Carnaby Street substation of the London Power Company. Arc-control devices, specially developed by the B.T.H. company, have been fitted to a number of existing circuit-breakers with a view to increasing their capacity, and the London Electric Railways placed an important order for breakers having three separate oval tanks and filled with cross-jet explosion pots, whereby the original rating of 150,000 kVA. has been raised to 350,000 kVA.

A steady output was maintained from the transformer factory throughout the whole twelve months, some of the transformers being for use in conjunction with mercury arc rectifiers, including two for use with the 20 kV. rectifiers of the British Broadcasting Company. Trolleybus and tramcar developments were pushed forward, and a large amount of research work was carried out in the production of silent a.c. motors, the increasing demand for which, for use in hospitals, houses, and office buildings, has been a feature of the electrical industry during the past year.

#### The General Electric Co. Ltd.

The demand for large, medium and small size motors and for slow speed alternators to be driven by oil and reciprocating steam engines overseas, has been well maintained, and several back pressure turbines have been supplied in this country to factories requiring process steam.

Railway electrification schemes have been completed for the Metropolitan and L.M.S. Railways, and coaches equipped for the latter railway incorporate control gear mounted on a special framework which can be withdrawn to facilitate repair or replacement. Trolleybus equipment has been developed by this company also, and a contract for 50 sets has been secured from the Birmingham Corporation.

Not the least interesting from a railway point of view are the various large lighting installations which have been completed during the year. An entirely new product is the Osira lamp developed, together with the necessary fittings, at the Wembley laboratories. Streets lighted by the new lamp can be seen in Croydon, Lewisham, Kingsbury, Manchester, Oldham, Blackpool, Belfast and elsewhere.

**FIRST UNDERGROUND RAILWAY IN CHILE.**—A message received from Santiago reports that the first underground railway in Chile has been authorised by the Government. It will run from east to west for three miles under the busiest part of Santiago and has been promoted to alleviate the growing traffic problem in the city. It is further reported that tentative plans call for the organisation of a company with a £1,000,000 capital to construct and operate the line.

## British Railways' Combined Bid for American Tourist Traffic

Three of the British main line railways, the London Midland & Scottish, London & North Eastern, and Southern, together with an Irish railway, have combined in inaugurating a new campaign to attract tourist traffic from the United States to the British Isles. This campaign was launched on January 1 with the opening of a large travel bureau under the name of Associated British Railways Inc., at 551, Fifth Avenue, New York, under the supervision of Mr. T. R. Dester, who has been appointed General Traffic Manager of the Corporation and whose portrait will be found on page 21. This bureau will be staffed by experts selected from the British railways concerned, who will be specially trained and will have a personal knowledge of those districts of the British Isles which make an appeal to the prospective American visitor.

An entirely new service will be placed at the disposal of the prospective tourist to Britain by the formation of this corporation, which has already been accepted by the Transatlantic Passenger Conference, and which will act as agents of all steamship lines serving Canadian and U.S. ports. The corporation has already planned a new standard series of inclusive tours of the British Isles, and will specialise in both individual and party travel to Europe. Inclusive rates covering steamship fares, rail, road and air transportation, hotel accommodation, sight-seeing, portage, &c., can be arranged, and it is confidently expected that it will be possible to create and foster rail travel in Great Britain by these simplified travel arrangements and by intensive and judicious propaganda throughout the United States. This should induce more Americans to visit the U.K.

## Signal Demonstration Van, L.N.E.R. Southern Area

The Southern Area of the London & North Eastern Railway has recently adapted an old sleeping saloon as a travelling signal demonstration van, by removing the partitions and equipping it with full-size and model signalling apparatus. In it the principles of mechanical and electrical signals, automatic and telegraph block working will be explained by the working staff of all departments. Problems arising in the course of operation, methods of construction and maintenance will also be dealt with in lectures at various centres on the system, aptly demonstrated by the very complete apparatus it contains.

The principal equipment consists of a gauge "0" (1½ in.), fully signalled model double line railway, complete with terminal, junction and block stations. A signal box with a 15-lever locking frame controls a power-worked junction outside the terminal, with electric locks and circuit closers. The main line proceeds thence to an outlying junction station, where a single line diverges from it, a 12-lever frame, with complete interlocking and necessary electric controls, operating the junction points and signals. It then continues to a block post, double line block working being installed from the terminal to the junction and again onwards to this post, and standard single needle instruments being used. A block switch at the junction is provided so that it can be switched out if desired. The branch line is equipped with electric token instruments.

The other double line from the terminal has automatic 3-aspect colour light signals, trains being described by block bell. The permanent way and

junction arrangements include proper facing point locks and bars, signal detectors, &c. At the terminal junction a point machine operates the facing points, the trailing points being spring controlled and appropriately bolted by the facing points. An outlying siding is also worked by a two-lever ground frame electrically controlled from the terminal signal box. Track circuiting is installed throughout the terminal yard, and also, of course, on the colour light section of line. A full size relay cabinet, including an automatic time relay, is fixed near the terminal station for the junction operation and track control, and electric indicators for the power points and signals are provided. The staff of the Signal and Telegraph Department has built up the whole equipment, and to it much credit is due for the thoroughness and detail of the work. The van, having previously been heartily approved by the principal officers of the Southern Area of the L.N.E.R., was formally opened on December 11, Mr. F. Downes making a brief speech and being supported by Mr. Carslake and other officers. We reproduce on page 19 two illustrations of the interior equipment.

**IMPROVED MOTOR WEIGHBRIDGES AT NEWCASTLE.**—With a view to speeding up traffic, two new 20-ton motor vehicle, weighing machines are to be installed at the Forth goods station, Newcastle, L.N.E.R. The new machines, which are being supplied by Henry Pooley & Son Ltd., will be of the quadrant indicator type which automatically records the weights of the vehicles dealt with.

## British Railways' New Paris Joint Office

To take the place of their former separate agencies in Paris, a new joint office was opened by the British main line railways on January 2. It occupies an excellent corner site at No. 12, Boulevard de la Madeleine, and was formerly the office of the London Midland & Scottish Railway, under whose

Estate Agent's supervision it has been re-arranged and re-decorated. As may be seen from our illustration it now forms a most attractive rendezvous for prospective visitors to this country. All the services to the public, travel agencies and business firms will be facilitated by means of this new joint



The new Paris joint office of the British main line railways

office, which is in charge of Mr. C. C. Verrinder, of the Southern Railway, who is the *doyen* of British railway representatives in Paris.

A reception last Tuesday evening to mark the inauguration was attended by the British Ambassador, Lord Tyrrell, who expressed his appreciation of the closer co-operation among the home railways evidenced by the new Paris office. Sir Herbert Walker, General Manager of the Southern Railway, in thanking Lord Tyrrell for attending the reception, referred to the fact that a joint office had also just been opened in New York.

Among the large gathering at the reception were noted the following:—

Lord Tyrrell (British Ambassador to France), Sir Robert Cahill (Commercial Attaché), Mr. G. D. N. Haggard (British Consul in Paris), Sir John Pilter (British Chamber of Commerce in Paris), Mr. Noble Hall (British Tourist Office), Monsieur Monteux (Imperial Airways), MM. Paul Jokelson, Javary, Astruc and de Fontenay (A.L.A. and S.A.G.A.), Sir Theodore Morrison (British Institute), Sir Herbert Walker, Messrs. W. Bishop, E. C. Cox, J. B. Elliot, F. A. Brant, H. A. Howie and C. Grasemann (Southern Railway), Messrs. H. L. Thornhill, Ashton Davies, A. Eddy, W. R. C. Clay, G. H. Loftus Allen, K. R. N. Speir and H. W. Phillips (L.M.S.R.), Messrs. C. J. Selway and C. Dandridge (L.N.E.R.), Messrs. F. R. Potter, K. W. C. Grand and G. E. Orton (G.W.R.), MM. Dautry, Boudier, Hauterrie, Authier, Xasse and P. Levy (Etat), MM. Levy, Bardin and de Foucault (Nord), M. Bernard (Ceinture), MM. Baillargues and Escolle (P.O.), MM. Cucherousset and Ducrot (P.L.M.), M. Pradeau (A.L.), MM. Dreyfus and Boqué (Midi), M. Paul Martin (Metro.), Baron Snoy, MM. Loch and de Sayve (Cie. Int. Wagons-Lits), and M. Banet-Rivet (Cie. Générale Transatlantique).

## RAILWAY AND OTHER REPORTS

**Pullman Car Co. Ltd.**—No payment on account of arrears of dividend on preference shares can be made on January 1 next. Dividend has been paid to December 31, 1930.

**Metropolitan Railway Country Estates Limited.**—The accounts for the year ended October 31 show a profit of £18,601 (against £10,672 for 1931-32). A dividend of 4 per cent. is again recommended and £3,328 is to be transferred to reserve, leaving £22,628 to be carried forward (against £21,355). In order to pay last year's dividend, £3,328 was withdrawn from the dividend equalisation account.

**United Automobile Services Limited.**—This company is controlled jointly by the L.N.E.R. and Tilling & British Automobile Traction Limited, and operates omnibus services in Durham, Northumberland, and the North Riding. For the year ended September 30, 1933, the profit was £61,507. With the addition of £31,333 brought forward, the total for the year is £92,840. Preference dividend and directors' fees absorb £12,450, leaving £80,390, out of which the directors recommend a dividend of 7 per cent. on the ordinary shares, leaving £31,390 to be carried forward. A number of

omnibus businesses have been purchased during the year.

**W. & T. Avery Limited.**—An interim dividend is announced, payable on January 1, of 5 per cent. on the ordinary shares, the same as a year ago.

**Cleveland Bridge & Engineering Co. Ltd.**—For the year ended September 30, the net profit, after again making a transfer from uncompleted contracts reserve, was £17,794, against £18,149 for 1931-32. A final dividend is to be paid on the ordinary shares of 3½ per cent., tax free, making 5 per cent., tax free, for the year, as for 1931-32, and an allocation of £2,000 is again made to general reserve. The balance forward is about £1,000 lower at £7,264.

**Salvador Railway.**—This company earned a working profit of £3,242 for the year ended June 30 (against a loss of £3,760 for 1931-32), but after charging debenture service, &c., there was a net loss for the year of £38,642 (against £51,127). A total debit balance of £97,587 is now carried forward. The amount of debentures redeemed remains at £657,900. Interest on the prior lien debentures was duly met, but owing to the depleted receipts no debentures were redeemed during

the past year, and it was not possible to meet interest payments on the mortgage debentures or ten-year notes.

**Chesapeake and Ohio Railway.**—This American company has declared a quarterly dividend of 70 cents. This compares with a previous dividend of 62½ cents.

**Dorman Long & Co. Ltd.**—The accounts for the year to September 30 last show a profit on trading of £226,084. The figure includes investment income. The sum of £236,140 income tax refund is added, making £462,224. After providing for idle plant charges, interest on the two debenture issues, and bank and other loan interest, the debit balance carried forward is increased from £387,768 to £448,727.

**Central Wagon Co. Ltd.**—The report for the year ended September 30 states that the net profit amounted to £40,915 (against £39,799 for 1931-32). A dividend of 6 per cent. is again proposed, and £28,745 has been transferred to reserve, increasing that account to £60,000. The balance forward is reduced from £5,498 to £4,168. In addition to meeting the fixed instalments on financed wagons, the directors have continued the policy of repaying in advance capital outstanding under certain of the hire purchase agreements for wagon stock.

## THE MONTH'S RAILWAY LAW

### Current Events

The end of the Michaelmas term saw a good deal of work in the King's Bench Division remaining to be dealt with in 1934. This was largely due to the absence of judges owing to illness, and will soon be put right. Below will be found notes of the various railway cases decided last term. In addition to these, it should be mentioned that the plaintiff's Appeal from Mr. Justice Roche and a special jury in *Daniell v. G.W.R.* was dismissed on December 1 last.

### Two Railway Rating Appeals

Our recent summary of the method of valuation under the Railways (Valuation for Rating) Act 1930, was well timed in view of the reports now to hand of the result of the appeals of the L.M.S.R. and the L.N.E.R. decided in the House of Lords at the end of last term. These were rating appeals from the orders of the Railway and Canal Commission against findings of the respondents, the Anglo Scottish Railways Assessment Authority.

The cases arose under the Railways (Valuation for Rating) Act 1930, and the question in each case was whether sums received as compensation by the railway companies after the war under the Railways Act 1921 were revenue or an amount set aside out of revenue within the Railways (Valuation for Rating) Act 1930, so that interest thereon ought to be deducted under section 4, subs. 3 (ii), from revenue expenditure in ascertaining the "average net receipts" in arriving at the rateable values to be entered in the Railway Valuation Roll under that Act. The companies contended that these were not in the category of revenue, being paid in settlement of a number of claims of a capital nature. The respondents, who were the Anglo Scottish Railways Assessment Authority, maintained the contrary, and argued that such part of these sums as remain unexpended of money set aside for management, working, maintenance and renewal, was properly chargeable to revenue.

The duty of the Rating Authority under the Railway Rating Act, 1930, section 4, is to find out the average net receipts for the relevant years, which are 1928 and 1929 in the case of the first Railway Valuation Roll. The Authority has then to estimate by reference to these annual net receipts the annual rent payable by a hypothetical tenant for the hereditaments occupied by the company, the tenant paying rates and taxes, repairs and insurance. "Net receipts" under section 4, subs. 3, are the amount produced by deducting from the total revenue receipts in the year receipts arising from sources which may be described as "non-railway hereditaments," including general interest.

It is true that the Railways Act 1921, section 11, subs. 4, enables the com-

panies to apply sums received as "War Compensation" to any purpose for which the earnings of the company may be applied. Such a statutory provision, according to Lord Atkin and the other Law Lords, did not make the sum "revenue" as opposed to capital, and therefore did not affect the question in the case.

If the Assessment Authority's contention was right, the whole £60,000,000 compensation (had the Act been in force at that time) would have had to be regarded as part of the rates fund for the year, except any that was set aside for renewals. The House of Lords would not accede to so wild a proposition, or hold that sums so received were ever intended to come into the computation of rateable value. They were satisfied that for the purposes of the Act of 1930, these sums were not set aside out of revenue. The result therefore was a victory for the railway company in both cases, and both appeals were allowed.

### A Level Crossing Case

*Southern Railway Company v. Burrows* (November 8).

This case has had a chequered course. It was originally heard before Mr. Justice M'Cardie and a jury, who awarded the plaintiff £500 damages under Lord Campbell's Act for the loss of her husband, who was killed by a train at a level crossing between Canterbury and Minster. Mr. Justice M'Cardie reserved judgment until he had heard legal argument, but before he delivered judgment his own death occurred, and Mr. Justice Avory, who was nominated to finish the case, entered judgment for the widow. The railway company appealed and the Court of Appeal has now reversed the decision. The crossing in question was not over a public road, but provided an accommodation way to some sand-pits. The gates at the crossing were locked, and it seemed extraordinary that the jury should have found it to be negligence on the part of the company in not having a man or automatic signals at the crossing. It would be impossible for the railway company to have not only locked gates, but a look-out man, at every accommodation crossing.

Lord Justice Scrutton, Lord Justice Lawrence and Lord Justice Slesser said that there was no evidence to justify this conclusion, and that the company's appeal must succeed. There is no rule of law to the effect that failure to provide a look-out man is evidence of negligence, although in a particular case the jury may find it to be negligence in fact.

Where, however, the railway crosses a "turn-pike" road, the company is required by the Railways Clauses Act 1845 "to employ proper persons to open and shut the gates." Otherwise the question of such a duty depends on the circumstances of the case and the company's knowledge of the traffic

and user by foot-passengers at the point in question.

### Level Crossing Amendments

While on the subject of level crossings it is to be observed that the Road and Rail Traffic Act, 1933, contains a clause (section 42) which enables the Minister of Transport to direct that the gates at a level crossing over a public road, instead of being closed over the road, shall be kept closed across the railway. The order is made on the application of the railway company concerned. The order may direct the closing of the gates either constantly or on certain days or at certain times, except when engines or vehicles passing along the railway have occasion to cross the road. These powers are in addition to and not in substitution of powers given by the Railways Clauses Consolidation Act, 1845, section 47, or private Acts which relate to the closing of gates on level crossings. The above section (section 42) of the new Act repeals that part of section 40 of the Act of 1845 which requires engines to slacken speed to four miles an hour where the railway crosses a road on the level close to a station.

### Fall from a Train

*Hillman v. L.N.E.R.* *The Times*, November 25.

This case was one of those unexplained mysteries which occasionally occur in railway travel as in other forms of transport. The plaintiff was standing in a crowded third class carriage of a train running between Stratford Market and N. Woolwich. While the train was in a tunnel the carriage door suddenly opened and Miss Hillman fell into the six foot way and was seriously injured. The lock of the carriage seemed to be in perfect order and the door shut. The company attributed the opening of the door to a passenger sliding the lock while the train was in motion. The carriages were old but the locks had been renewed from time to time. Mr. Justice Avory left it to the jury to say whether the opening was due to some defect in construction of the lock or the fastening of the door. The jury found for the plaintiff and awarded her £1,500 damages. It is, of course, difficult for a guard to say positively that all the handles of the carriages are properly fastened when a train leaves a station, and in these cases the sympathy of a jury is not unnaturally with the injured person. There was no suggestion that the plaintiff herself was in any way negligent.

### Southern Railway Motor-car Services to the Continent.

—On January 1 the Southern Railway introduced a daily boat from Folkestone to Boulogne for the conveyance of motor cars and their passengers, leaving Folkestone Harbour at 10.15 a.m., and arriving at Boulogne Maritime at 12.15 p.m. The return service leaves Boulogne (Bassin Loubet) at 12.0 noon, arriving at Folkestone Harbour at 2.15 p.m.



## NOTES AND NEWS

**Funeral of Viscount Churchill.**—The funeral service for the late Viscount Churchill will be held at St. James's Church, near Paddington, at 11 a.m. to-morrow (Saturday). Interment will follow at Charlbury, near Oxford. A special train will leave Paddington at 12.10 p.m.

**Art and Industry.**—Mr. Frank Pick, Vice-Chairman of the L.P.T.B., has been appointed Chairman of a representative Council for Art and Industry, consisting of 28 members, just set up by the President of the Board of Trade.

**Speeding up Freight Traffic near Manchester.**—An important local improvement scheme has been completed by the L.M.S.R. at Hazel Grove, on the Manchester and Buxton line, where new up and down loop lines have just been brought into use. The provision of these will expedite freight train working over this busy section.

**Railway Stockholders' Luncheons.**—The British Railway Stockholders' Union Limited proposes to hold some railway luncheons in January and February. On January 11, Sir Ernest Benn will speak on "Political Interference with Industrial Matters," and on January 25, Sir Malcolm Campbell on "Where the Rail beats the Road."

**Railway Work for Limerick.**—As a result of the representations made by Limerick public bodies to the Great Southern Railways Company for re-opening of the Limerick locomotive workshops, it is understood that the work of repairing wagons will be considerably extended early this year, giving employment to a large number of men.

**The Hellfield Fatal Accident.**—The Ministry of Transport inquiry by Lt.-Col. Anderson, on Friday, December 28, did not publicly reveal how the brake van concerned in this collision of December 19 escaped out of the down loop and ran back on the facing road, and met the Manchester to Carlisle goods train in a head-on collision. As the inquest on the driver and fireman killed in the mishap has not been completed, the evidence of the signaller in the goods yard box was not reported, as it might incriminate him at the inquest.

**The New Greenisland Loop, L.M.S. (N.C.C.).**—The Greenisland loop line will be formally opened by the Governor of Northern Ireland (the Duke of Abercorn) on January 17. A special train will leave Belfast (York road station) at 10.20 a.m. with a number of guests of the London Midland & Scottish Railway (Northern Counties Committee), and the ceremony in connection with the opening of the new line will take place at the south end of the main line viaduct, over Valentine's Glen, near Greenisland. Afterwards the special train will pro-

ceed to Portrush over the new line, and luncheon will be served in the Northern Counties Hotel. With the introduction of new engines on this line next summer, the journey time from Belfast to Portrush will be shortened by nearly half-an-hour. The Greenisland loop was described in THE RAILWAY GAZETTE of June 16, 1933.

**The Last G.W.R. Bus Service.**—The last remaining motor-bus service to be operated by the G.W.R.—the Great Western Railway and Southern Railway joint omnibus service between

mind the management will be directed towards maintaining efficiency, speed, punctuality, comfort, courtesy, and attention."

**The Schoolboys' Own Exhibition.**—One of the principal exhibits at the Schoolboys' Own Exhibition, being held this year at the White City, is a complete model designed to depict the various facilities of the London Passenger Transport Board. The main feature of this model is an electrically-operated underground railway controlled by automatic colour-light signals. The chief station is in section, showing a working escalator and station entrance above ground. There is also a representation of a modern suburban station, and



*The London Transport exhibit as shown at Charing Cross station and now in the Schoolboys' Own Exhibition*

Wyke Regis, Weymouth, and Radipole—was taken over on Monday, January 1, by the Southern National Omnibus Co. Ltd., whose green cars have replaced the familiar G.W.R. chocolate and cream buses. Thus was brought to an end a railway association with passenger road transport extending over thirty years. We refer to this editorially on page 1.

**Irish Free State Rail and Road Co-ordination.**—On Monday last, January 1, the passenger and goods road transport services hitherto performed by the Irish Omnibus Co. Ltd. and John Wallis & Sons Ltd. were taken over by the Great Southern Railways Company. Under the heading "Co-ordination Achieved" the railway published a full-page manifesto on the front page of *The Irish Times* on Monday last, in which it was stated, "The Great Southern Railways Company is determined that this new co-ordinated transport in the Saorstát Éireann shall be carried out to the complete satisfaction of the trading community of the country and the public at large. With this main purpose of public service in

buses, tramcars, and Green Line coaches of London Transport. The model, which measures 20 ft. by 10 ft., brings out the characteristic features of the London Transport area, churches, villas, factories, docks, trees, hedges and fields, and even the petrol-filling station. Bassett-Lowke Limited, of Northampton, was responsible for the building of the model, which was designed in conjunction with Beck & Pollitzer. Previous to the opening of the exhibition, it was installed at Charing Cross station. A working model of Europe's largest electric furnace on the stand of Thos. Firth & John Brown Limited attracted considerable attention. Burroughs Adding Machine Limited is also exhibiting. The exhibition closes on January 13.

**London Transport Acquisitions.**—During December the London Passenger Transport Board took over 11 of the scheduled independent omnibus undertakings in London, with a total of 54 vehicles. In addition, the coach services of Premier Line Limited were taken over on December 20, thus giving the Board services from London to

Windsor and Farnham Common via Slough. The latter is a new route to the Board, while the former Green Line service to Windsor via Slough was abandoned on October 3 last, when the order of the Minister of Transport reduced considerably the total number of coaches on this route.

**Collision on L.M.S.R.**—On the evening of January 1, during the fog which enveloped London, two Watford-Euston electric trains came into collision. Two of the coaches were telescoped, but there were very few passengers and only three persons were hurt.

**Agreed Charges.**—As will be seen from the legal notice published on pages 32-3 several applications have been lodged with the Railway Rates Tribunal for its approval of agreed charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933. Particulars of these agreed charges and applications may be inspected at the office of the Tribunal, 2, Clement's Inn, W.C.2. Notices of objection must be filed at the office of the Registrar, at the above address, on or before January 25.

**New L.M.S. Station at Leigh-on-Sea.**—Yesterday (Thursday), the Mayor of Southend-on-Sea formally opened the new L.M.S. station at Leigh-on-Sea. An account of the ceremony and subsequent luncheon will appear in our next issue. The opening of this station marks a further stage in the big scheme of development being carried out on the London Tilbury & Southend section of the L.M.S.R. This scheme includes the widening and electrification of the line between Barking and Upminster, the building of five new stations, the provision of loop lines, and the remodelling of several existing stations, goods depots, and engine and carriage sheds.

**London Transport's Staff Magazine.**—*Pennyfare* is the title given to the staff monthly magazine published at a penny by the London Passenger Transport Board. It replaces the old *T.O.T. Magazine*—which title, it is explained, no longer embraces all the types of transport whose news is printed; moreover, the penny is the small coin upon which the prosperity and success of the Board's great undertaking mainly depends. *Pennyfare* is an excellent pennyworth. Printed on imitation art paper, which, of course, greatly enhances the appearance of its many interesting illustrations, it is enclosed in a striking cover, which has been designed by Mr. V. Harvey. Its reading matter is good and varied, and is by no means confined to staff doings. Three articles in particular strike us as being more than ordinarily interesting, viz.: "From One Horse to 'London Transport,'" the Story of Tilling's, by H. Webb; "A Story of London's Tramways"; and "Three-Score-and-Ten"—the last-named being the story of the Metropolitan Railway. The magazine opens with an inspiring New Year's message to the staff from the Chairman, Lord Ashfield, which we reproduce in full on page 12.

## British and Irish Railway Traffic Returns

GREAT BRITAIN	Totals for 52nd Week			Totals to Date		
	1933	1932	Inc. or Dec.	1933	1932	Inc. or Dec.
L.M.S.R. (6,941 mls.)						
Passenger-train traffic ...	365,000	369,000	- 4,000	24,197,000	24,091,000	+ 106,000
Merchandise, &c. ...	283,000	241,000	+ 42,000	21,611,000	21,456,000	+ 155,000
Coal and coke ...	214,000	173,000	+ 41,000	11,521,000	12,092,000	- 571,000
Goods-train traffic ...	497,000	414,000	+ 83,000	33,132,000	33,548,000	- 416,000
Total receipts ...	862,000	783,000	+ 79,000	57,329,000	57,639,000	- 310,000
L.N.E.R. (6,339 mls.)						
Passenger-train traffic ...	273,000	271,000	+ 2,000	15,714,000	15,721,000	- 7,000
Merchandise, &c. ...	228,000	200,000	+ 28,000	15,340,000	15,050,000	+ 290,000
Coal and coke ...	214,000	188,000	+ 26,000	11,101,000	11,381,000	- 280,000
Goods-train traffic ...	442,000	388,000	+ 54,000	26,441,000	26,431,000	+ 10,000
Total receipts ...	715,000	659,000	+ 56,000	42,155,000	42,152,000	+ 3,000
G.W.R. (3,753 mls.)						
Passenger-train traffic ...	156,000	154,000	+ 2,000	10,438,000	10,474,000	- 36,000
Merchandise, &c. ...	92,000	78,000	+ 14,000	8,747,000	8,540,000	+ 207,000
Coal and coke ...	75,000	65,000	+ 10,000	5,087,000	5,171,000	- 84,000
Goods-train traffic ...	167,000	143,000	+ 24,000	13,834,000	13,711,000	+ 123,000
Total receipts ...	323,000	297,000	+ 26,000	24,272,000	24,185,000	+ 87,000
S.R. (2,181 mls.)						
Passenger-train traffic ...	228,000	227,000	+ 1,000	14,738,000	14,469,000	+ 269,000
Merchandise, &c. ...	46,500	44,000	+ 2,500	3,178,500	3,258,000	- 79,500
Coal and coke ...	41,500	37,000	+ 4,500	1,551,500	1,630,000	- 78,500
Goods-train traffic ...	88,000	81,000	+ 7,000	4,730,000	4,888,000	- 158,000
Total receipts ...	316,000	308,000	+ 8,000	19,468,000	19,357,000	+ 111,000
Liverpool Overhead (6½ mls.)	873	882	- 9	58,714	63,302	- 4,588
Mersey (4½ mls.)	3,750	3,693	+ 57	209,123	210,565	- 1,442
*London Passenger Transport Board	442,000	—	—	12,868,200	—	—
IRELAND						
Belfast & Co. Dn. pass. (80 mls.)	2,213	2,319	- 106	128,644	130,188	- 1,544
" " goods	303	281	+ 22	27,076	31,969	- 4,893
" " total	2,516	2,600	- 84	155,720	162,157	- 6,437
Great Northern pass. (562 mls.)	11,250	11,821	- 571	409,300	569,471	- 160,171
" " goods	5,300	5,894	- 594	375,200	586,044	- 210,844
" " total	16,550	17,715	- 1,165	784,500	1,155,515	- 371,015
Great Southern pass. (2,158 mls.)	27,110	24,612	+ 2,498	1,224,683	1,322,484	- 97,801
" " goods	12,911	12,895	+ 16	1,622,997	1,697,404	- 74,407
" " total	40,021	37,507	+ 2,514	2,847,680	3,019,888	- 172,208

1933 Christmas and Boxing Day

1932 Boxing Day and Bank Holiday

## Forthcoming Events

- Jan. 6 (Sat.).—Locomotivemen's Craft Guild (London), at Borough Polytechnic Inst., S.E.1, 6.30 p.m. "Firing," by Mr. T. G. Gude.
- Jan. 8 (Mon.).—Permanent Way Institution (London), at Waterloo Station, Southern Railway, 7 p.m. "The Rise of the Railroad and Railway," by Mr. J. Garnett.
- Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 5.30 p.m. "The Royal Scot in Canada and the U.S.A.," by Mr. E. J. H. Lemon.
- Stephenson Locomotive Society, at King's Cross Station, London, 6.30 p.m. "The Railways of Switzerland over Mountain and Plain," by Mr. R. A. H. Weight.
- Jan. 9 (Tues.).—Federation of Railway Lecture and Debating Societies, North Eastern Area, at Railway Inst., Queen Street, York, 7 p.m. *Debate*: "That a Considerable Degree of Decentralisation is Desirable in the Reorganisation of the Group Railway Companies."
- Illuminating Engineering Society, at Inst. of Mechanical Engineers, Storey's Gate, London, S.W.1, 7 p.m. "Portable Lamps and their Applications," by Mr. A. Cunningham.
- Institute of Transport (Birmingham), at Queen's Hotel, 6 p.m. "Transport and Decentralisation," by Sir Herbert Austin, K.B.E.

- Jan. 10 (Wed.).—Institution of Welding Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 7.45 p.m. "The Development of Welding as Applied to Boiler Drums and Steam Receivers," by Mr. C. H. Davy.
- Permanent Way Institution (Newcastle), at Mining Inst., Westgate Road, 7 p.m. Annual General Meeting. "The Working and Management of a Large Passenger Station," by Mr. H. A. Butcher.
- Jan. 11 (Thurs.).—G.W.R. (London) Lecture and Debating Society, at Paddington Station, W.2, 5.45 p.m. "Keeping Abreast of the Times in the Goods Department," by Mr. H. W. Payne.
- British Railway Stockholders Union Ltd., at St. Ermin's Restaurant, Caxton Street, London, S.W.1, 12.45 for 1 p.m. Luncheon. "Political Interference with Industrial Matters," by Sir Ernest Benn.
- Institute of Metals (London), at Society of Motor Manufacturers and Traders Ltd., 83, Pall Mall, S.W.1, 7.30 p.m. "Beryllium and its Alloys," by Mr. H. A. Sloman.
- Jan. 12 (Fri.).—Institute of Transport (Leeds), at Town Hall, 6.30 p.m. "Industrial Transport," by Mr. F. Smith.
- Railway Students' Association (Edinburgh), at Gould Hall, St. Andrew Square, 7.30 p.m. "The Organisation of Labour Operations at Docks," by Mr. C. M. Jenkin Jones.
- Retired Railway Officers' Society, in Essex Room, Liverpool Street Hotel, London, E.C.2, 3 p.m. Ladies' Tea.

## CONTRACTS AND TENDERS

The Directors of the Great Western Railway have authorised the placing of the following contracts:—

Supply of 10 Fordson trucks: R. Pratt & Sons, Sutton.

Installation of central heating at Reading goods offices: H. C. Goodman, Reading.

Supply of iron tanks and other iron and steel work at Dartmouth landing stage: Fairfield Shipbuilding & Engineering Co. Ltd., Cheltenham.

Supply and erection of five timber-framed warehouses at Warminster, Chipping Sodbury, Dulverton, Morebath, and Yetminster stations, respectively: F. Pratten & Co. Ltd., Midsomer Norton, near Bath.

Provision of a turntable at Brentford docks: E. C. & J. Keay Limited, Wolverhampton.

Provision of a vertical milling machine for the Company's Swindon works: Alfred Herbert Limited, Coventry; supply and erection of a 7½-ton electric travelling hoist block at Swindon works: Middleton Bros., Leeds; provision of a power press at Swindon works: E. W. Bliss & Company, London.

Provision of additional bed and bath rooms, a squash racquet court, recreation room, and lock-up garages at Ragenna Castle Hotel, St. Ives: J. Williams & Company, St. Austell.

Henry Pooley & Son Ltd. has received from the L.N.E.R. an order for two new 20-ton motor-vehicle weighing machines, to be used at the Forth goods station, Newcastle-on-Tyne. The machines will be of the quadrant indicator type which automatically records the weights of the vehicles dealt with.

The English Electric Co. Ltd., Stafford, has been awarded an important contract for mercury-arc rectifiers by the London Midland & Scottish Railway. This installation will replace equipment that has supplied electricity to St. Pancras station and hotel for 35 years. The equipment will consist of three 200-kW. units, each comprising two 6-phase glass-bulb rectifiers with the necessary transformers and auxiliary equipment. The supply is 11,000 volts, 3-phase, 25-cycles, and the pressure on the d.c. side is nominally 230 volts. Grid control will be provided. The contract also includes four 75-kW. equipments, with-out grid-control, for converting an 11,000-volt, 3-phase, 25-cycle supply to d.c. at 230 volts, to be installed, two each, at the Kentish Town and St. Pancras goods sub-stations.

The English Electric Company also has orders for rectifiers for the L.N.E. and G.W. Railways. Two 300-kW. glass-bulb equipments are being supplied for Parkston Quay. The G.W.R. contract is for a 450-kW. glass-bulb rectifier installation to replace existing steam-driven d.c. generators installed at Fishguard Harbour. Supply will be taken at 11,000 volts, 3-phase, 50-cycles, and the rectifiers will be arranged to give a three-wire d.c. supply at a pressure of 2 × 250 volts.

Braithwaite & Co. (India) Ltd., Calcutta, has received an order from the Indian Stores Department for one 115,200-gall. steel tank, complete with staging, roofing, &c.

Burn & Co. Ltd., Howrah, has received orders from the Indian Stores Department, New Delhi, for a Samuel Platt bolt spike and rivet forging machine, a Samuel Platt bolt head

clipping machine and a Samuel Platt bar iron cutting-off machine.

The Bengal-Nagpur Railway has placed orders for quantities of angles, steel bars, steel plates, and steel springs among the following firms:—Balmer Lawrie & Co. Ltd., Calcutta; Burn & Co. Ltd., Howrah; Jessop & Co. Ltd., Calcutta; Martin & Co., Calcutta; Dorman Long & Co. Ltd., Calcutta; and The United Steel Co. (India) Ltd., Calcutta.

The Egyptian State Railways Administration invites tenders, receivable by March 17, by the General Management, Cairo station, for the supply of motor buses and chassis. Copies of the conditions are obtainable of the Chief Inspecting Engineer's Office, 41, Tothill Street, Westminster, S.W.1 and from the Mechanical Department, Saptieh, Cairo.

H.M. Senior Trade Commissioner in South Africa reports that the South African Railways and Harbours Administration is calling for tenders, to be presented in Johannesburg by January 8, 1934, for the supply and delivery of structural steel required for an engine shed at Braamfontein. Firms desirous of offering steelwork of United Kingdom manufacture can obtain the further details of this call for tenders from the Department of Overseas Trade.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, invites tenders, receivable by January 22, for 5,000 yards of 37/064 V.I.R. braided cable required for the N.W. Railway at Storespura.

The Egyptian State Railways Administration invites the following tenders, receivable at the Chief Inspecting Engineer's Office, 41, Tothill Street, Westminster, S.W.1:—

E.S.R. 29-8. For 60 resistance and 8,050 switch-board lamps (4, 12, 50, 24 volts). Due January 18.

E.S.R. 10-36. For 35,600 figures for marking foundry patterns.

E.S.R. 6-49. For 177,000 kilos. pig iron, class A, and 173,000 kilos. class B.

E.S.R. 33-2. For two high-tension switchgears, cubicle-type, and two switches for transformer control pillar.

E.S.R. 21-89. For 850 helical springs for short self-contained and long type buffers.

E.S.R. 31-29. For two transformers for automatic exchanges.

The following tenders are also invited, receivable at the Office of the Superintendent of Stores, Saptieh, Cairo:—

E.S.R. 7-26. For 10,500 kilos. bars, flat unribbed, and 34,700 kilos. bars flat ribbed. Due January 10.

E.S.R. 17-32. For 9,720 kilos. copper solid-drawn tubes from ½ in. to 6½ in. Due January 20.

E.S.R. 21-98. For injectors of various kinds and sizes. Due February 15.

E.S.R. 21-100. For 170 engine and tender tyres, standard gauge. 3 ft. 2½ in., 3 ft. 7½ in., and 5 ft. 0½ in. Due February 14.

E.S.R. 34-151. For a power board for Alexandra automatic exchange. Due February 8.

E.S.R. 21-88. For I.R. goods for vacuum brake equipment. Due February 12.

E.S.R. 1-100. For 4,000 mild steel joists. Due January 31.

E.S.R. 34-141. For battery materials. Due January 30.

E.S.R. 13-109. For machine tools. Due January 22.

The Egyptian State Railways Administration will shortly be calling for offers, due on March 31 next, for the supply by experienced builders of either one or two railcars. They are required to be driven by internal-combustion engines, but the type of fuel to be used will be left open to tenderers. It is intended to purchase cars seating 35 first-class and 35 second-class passengers. The bodies, which will be built integral with the underframe, are to be of steel construction, and, of course, efficient insulation from Egypt's heat will be an important feature. Alternative offers for railcars embodying air conditioning and cooling equipment will be requested, and separate extra offers for cold drinking water plant. These cars will be the first internal-combustion engined railcars to be used in Egypt. They are proposed for use on the Cairo-Suez direct line—a distance of 128 km.—and it is intended by these cars to offer a fast service at an average speed of 80 km. an hour.

The South Indian Railway invites tenders for the supply of three class XD locomotives and tenders. Tenders are receivable by Mr. E. A. S. Bell, Ag. Managing Director, South Indian Railway, 91, Petty France, Westminster, S.W.1, by January 26, 1934. Copies of the drawings can be obtained of the consulting engineers, Messrs. Robert White and Partners, 3, Victoria Street, Westminster, S.W.1.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, invites tenders, receivable by January 9, for one universal milling machine, 17½ in. × 4½ in. × 12 in.; one slotting machine, maximum stroke 8 in., to admit 12-in. height and 36-in. diameter; one 1-in. single-headed bolt screwing machine for belt drive; and one 14½ in. high speed shaping machine for single-pulley drive.

The L.M.S.R. is reported to have issued enquiries for tenders for 50/100 vestibuled third-class coaches and 20 vestibuled third-brake coaches of all-steel construction.

Surahammar Brukes, Sweden, has received an order from the Bhavnagar State Railway for 310 pairs of metre-gauge wagon wheels and axles to the inspection of Messrs. Robert White and Partners, consulting engineers.

The A.B.C. Coupler & Engineering Co. Ltd., Westminster, S.W.1, has received an order from the Bhavnagar State Railways, through the consulting engineers, Messrs. Robert White and Partners, for 150 vehicle sets of MCA PH type couplers.

The Sure-Arc Electrode Co., Ltd., of Coronation House, 4, Lloyd's Avenue, London, E.C.3, has secured an order from the London Passenger Transport Board for the supply for permanent way use of a further portable railway-type petrol-engined welding set, complete with auxiliary dynamo, for welding and grinding simultaneously.



# British and Irish Railway Stocks and Shares

Stocks	Highest 1933	Lowest 1933	Prices	
			Jan. 3, 1934	Rise/ Fall
G.W.R.				
Cons. Ord. ....	55½	31	54½	—
5% Con. Prefce. ....	109½	69½	111	+2
5% Red. Pref. (1950) ..	109½	87½	109	—
4% Deb. ....	108½ <sup>16</sup>	99½	108½	+1
4½% Deb. ....	108	100¾	111½	+2
4½% Deb. ....	116	105	116½	+1
5% Deb. ....	128	117½	129½	+1
2½% Deb. ....	65	60	64½	—
5% Rt. Charge ....	124	111½	125½	+1
5% Cons. Guar. ....	122	103	122½	+1
L.M.S.R.				
Ord. ....	297½	12½	25½	+½
4% Prefce. (1923) ....	51	17	45½	+½
4% Prefce. ....	72	33½	70½	+½
5% Red. Prf. (1955) ....	93	47½	92½	+1
4% Deb. ....	103½	89½	105*	+3
5% Red. Deb. (1952) ....	114	105	111½	—
4% Guar. ....	97½	68½	98	+½
L.N.E.R.				
5% Pref. Ord. ....	22½	7¾	21	—¼
Def. Ord. ....	10½	4½	9½	—
4% First Prefce. ....	65½	19½	64½	+½
4% Second Prefce. ....	40½	12½	38½	+½
5% Red. Pref. (1955) ....	83½	27	82½	+1
4% First Guar. ....	94½	58½	96	+2½
4% Second Guar. ....	89½	48	90	+½
3% Deb. ....	77	60½	78*	+½
4% Deb. ....	102½	80	104*	+2
5% Red. Deb. (1947) ....	112	102½	111	+½
4½% Sinking Fund Red. Deb. ....	107½	98½	106½*	+2
SOUTHERN				
Pref. Ord. ....	71	27¾	64	+1
Def. Ord. ....	24½	9½	20	+½
5% Prefce. ....	107½ <sup>16</sup>	74	109	+2
5% Red. Pref. (1964) ....	107½	78½	109	+½
5% Guar. Prefce. ....	124½	102¾	121½	+1
5% Red. Guar. Pref. (1957) ....	115½	103½	115½	—
4% Deb. ....	107½	96¾	107*	+1
5% Deb. ....	124½	114½	126½*	—
4% Red. Deb. 1962-67	107½	100	106½*	+1
BELFAST & C.D.				
Ord. ....	6	4	6	—
FORTH BRIDGE				
4% Deb. ....	99½	95½	100½	+2
4% Guar. ....	98½	94	100½	+3
G. NORTHERN (IRELAND)				
Ord. ....	7½	3½	5	—
G. SOUTHERN (IRELAND)				
Ord. ....	28	16	25	—
Prefce. ....	24	12½	19	—
Guar. ....	42	16¾	39½	+½
Deb. ....	60	30½	60	+½
I.P.T.B.				
4½% "A" ....	117½	112	116	+1
5% "A" ....	127½	119½	127	+2
4½% "T.F.A." ....	111½	106	109½	+½
5% "B" ....	122½	114	123	+½
5% "C" ....	86½	74½	84	—1
MERSEY				
Ord. ....	16½	5	12	—1
4% Perp. Deb. ....	83	63½	81½	—
3% Perp. Deb. ....	62	51	60½	—
3% Perp. Prefce. ....	50½	27	49½	—

\* ex dividend.

## LEGAL AND OFFICIAL NOTICES

IN THE COURT of the Railway Rates Tribunal

### Road and Rail Traffic Act, 1933. Agreed Charges.

NOTICE is hereby given that Applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal.

Particulars of the said Agreed Charges, and the said Applications, may be inspected at the Office of the Tribunal, 2, Clement's Inn, Strand, London, W.C.2, at any time during office hours and at the places specified in the sixth column of the said Schedule. A copy of each Application lodged with the Tribunal can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, 35, Parliament Street, Westminster, London, S.W.1, price 1s. 0d., post free.

Notices of objection by any parties entitled to object to the approval of any of the said Agreed Charges must state concisely the grounds

of objection and must be filed at the office of the Registrar, 2, Clement's Inn, Strand, London, W.C.2, on or before the 25th day of January, 1934, and a copy thereof on or before the same day served on or sent by registered post to Mr. G. Cole Deacon, at the above address. A separate Notice must be filed and served in respect of each Application.

Each Notice filed must be on foolscap size paper and must be stamped with an adhesive fee stamp for 2s. 6d. (which can be purchased at the office of the Tribunal only). If sent by post for filing each Notice must be accompanied by a Postal Order for 2s. 6d. payable to the Registrar when a stamp will be affixed at the office. A Notice by a Representative Body of Traders must contain a statement of the facts upon which such Body claims to represent a substantial number of traders interested in, or likely to be affected by the decision on, the application.

Four additional copies of each Notice must be lodged with the original at the office of the Registrar.

T. J. D. ATKINSON,  
Registrar.

4th January, 1934

Number of Application	Date of Lodgment	Railway Company.	Person or Firm	Nature of Agreed Charge	Where Available for Inspection
1934, No. 1	Jan. 1, 1934	L. & N.E., L.M. & S., and CHESHIRE LINES COMMITTEE	The CARBORUNDUM CO. LTD., Trafford Park, Manchester	Per ton. Emery wheels, abrasives, &c.	L.M. & S. Goods Office, Victoria Station, Manchester. Railway Clearing House, London. Raynes Park Goods Station.
" 2	"	SOUTHERN	JAMES CARTER & CO., (CARTER'S TESTED SEEDS LTD.), Raynes Park, London	Per ton. Fertilizers and seeds.	Railway Clearing House, London.
" 3	"	G.W. and SOUTHERN	DAVID GREIG LTD., Waterloo Road, London	Per ton. Groceries and provisions	Railway Clearing House, London.
" 4	"	L.M. & S.	ALBERT E. JONES (LONGTON) LTD., Stoke-on-Trent	Per package. China and earthenware	Longton Goods Station. Railway Clearing House, London.
" 5	"	L. & N.E.	WIGGINS TEAPE & ALEX. PIRIE (SALES), Aldgate, London	Per ton. Paper for printing, &c.	Blackburn Goods Station. Railway Clearing House, London.
" 6	"	G.W., L. & N.E., L.M. & S. and SOUTHERN	The CHISWICK PRODUCTS LTD., Chiswick, London	Per ton. Varnishes, paints, polishes, dressings, &c., and tinplates	Port Talbot Goods Station. Railway Clearing House, London.
" 7	"	CHESHIRE LINES COMMITTEE and L.M. & S.	JOHN HORN (STOCK-PORT) LTD., Stockport	Per ton. Confectionery	Heaton Norris Goods Station. Stockport. Railway Clearing House, London.
" 8	"	L. & N.E. and L.M. & S.	JOHN PATERSON & CO. LTD., Glasgow	Per ton. Ammoniated liquid soap and ammonia solution	Glasgow High Street Goods Station. Railway Clearing House, London.
" 9	"	L. & N.E. and L.M. & S.	ACME WRINGERS LTD., Glasgow	Per ton. Washing and wringing machines, &c.	Glasgow High Street Goods Station. Railway Clearing House, London.
" 10	"	L. & N.E. and L.M. & S.	WM. COLLINS, SON & CO. LTD., Glasgow	Per ton. Books, magazines, papers, periodicals and stationery	Glasgow High Street Goods Station. Railway Clearing House, London.
" 11	"	G.W., L. & N.E., L.M. & S. and SOUTHERN	JEVES' SANITARY COMPOUNDS CO. LTD., Plaistow, London	Per ton. Disinfectants, soap, toilet paper, &c.	Railway Clearing House, London.
" 12	"	L. & N.E.	T. G. TICKLER & CO. LTD., Grimsby	Per ton. Jams, mince-meat, bottled goods, &c.	Grimsby Town Goods Station. Railway Clearing House, London.
" 13	"	L. & N.E.	T. G. TICKLER & CO. LTD., Grimsby	Per ton. Empty cases and jars returned to the firm	Glasgow High Street Goods Station. Grimsby Town Goods Station. Railway Clearing House, London.
" 14	"	L. & N.E.	The ENFIELD HIGHWAY CO-OPERATIVE SOCIETY LTD., Enfield	Per ton. Provisions, oil-cake and chandlery	Railway Clearing House, London.
" 15	"	SOUTHERN	SPILLERS LTD., St. Mary Axe, London	Per ton. Dog biscuits, bird seed and meals and husks for animal and poultry feeding	Railway Clearing House, London.
" 16	"	G.W.	KEARLEY & TONGE LTD., Mitre Square, London	Per package. Cooked meats, brawn and sausages	Railway Clearing House, London.

## Legal and Official Notices—(continued.)

Number of Application	Date of Lodgment	Railway Company.	Person or Firm	Nature of Agreed Charge	Where Available for Inspection
1934, No. 17	Jan. 1, 1934	L. & N.E.	PLANT BROS. LTD., Enfield, Middlesex	Per package Small furniture and garden furniture	Railway Clearing House, London.
" 18	"	G.W. and L.M. & S.	The B.S.A. CYCLES LTD., Birmingham	Per machine Motor bicycles (complete)	Snow Hill Passenger Station, Birmingham. Railway Clearing House, London.
" 19	"	L. & N.E. and L.M. & S.	DRYAD LTD., Leicester	Per package Cane work, plywood, &c., and wool brushes and tools for handicraft work	London Road (L.M. & S.) Passenger Station, Leicester. Railway Clearing House, London.
" 20	"	G.W., L. & N.E., L.M. & S. and SOUTHERN	FARMA CREAM PRODUCT CO., London	Per package Farma cream	Railway Clearing House, London.
" 21	"	G.W., L. & N.E., L.M. & S. and SOUTHERN	JOHN MYERS & CO. LTD., Westminster Bridge Road, London	Per package Clothing, drapery and general stores wares	Railway Clearing House, London.
" 22	"	G.W. and SOUTHERN	G. ROBINSON & SONS (CORNWALL) LTD., Cornford, Cornwall	Per ton Rabbits (dead)	Launceston (S.R.) Passenger Station. Railway Clearing House, London.
" 23	"	L.M. & S.	SAXONE SHOE CO. LTD., Kilmarnock	Per package Boots and shoes	Kilmarnock (L.M. & S.) Passenger Station. Railway Clearing House, London.
" 24	"	G.W., L. & N.E., L.M. & S. and SOUTHERN	S. SIMPSON, Stoke Newington Road, London	Per package Clothing and woollen goods	Railway Clearing House, London.
" 25	"	G.W. and SOUTHERN	P. H. TONKIN LTD., Truro, Cornwall	Per ton Rabbits (dead)	Truro Passenger Station. Railway Clearing House, London.
" 26	"	L. & N.E. and L.M. & S.	I. & H. CAPLAN LTD., Sheffield	Per package Clothing, drapery and general stores wares	Victoria (L. & N.E.) Passenger Station, Sheffield. Railway Clearing House, London.
" 27	"	L.M. & S.	EUGENE LTD., Hendon, London	Per package Paper sachets and small parts of hair-waving machines	Railway Clearing House, London.
" 28	"	SOUTHERN	FREEMANS, Lavender Hill, London	Per package Clothing, drapery and general stores wares	Railway Clearing House, London.
" 29	"	G.W., L. & N.E., L.M. & S. and SOUTHERN	A. GOLDENFELD & CO. LTD., Whitechapel, London	Per package Haberdashery and hosiery	Railway Clearing House, London.
" 30	"	G.W., L. & N.E., L.M. & S. and SOUTHERN	CARRERAS LTD., London	Per ton Manufactured tobacco, cigarettes, &c.	Railway Clearing House, London.
" 31	"	L.M. & S.	" TWO STEEPLES " LTD., Wigston	Per package Woollen goods	Wigston (Glen Parva) Station. Railway Clearing House, London.
" 32	"	L.M. & S.	ALLIED SUPPLIERS LTD., City Road, London	Per ton Multiple - shop traffic - (provisions, &c.)	Railway Clearing House, London.
" 33	"	G.W.	ALLIED SUPPLIERS LTD., City Road, London	Per ton Multiple - shop traffic - (provisions, &c.)	Railway Clearing House, London.
" 34	"	SOUTHERN	ALLIED SUPPLIERS LTD., City Road, London	Per ton Multiple - shop traffic - (provisions, &c.)	Railway Clearing House, London.
" 35	"	G.W., L. & N.E., L.M. & S. and SOUTHERN	HARRODS, LTD., Knightsbridge, London	Per package Clothing, drapery and general stores wares	Railway Clearing House, London.
" 36	"	G.W., L. & N.E., L.M. & S. and SOUTHERN	HARRODS, LTD., Knightsbridge, London	Per ton Furniture and general stores wares	Railway Clearing House, London.
" 37	"	CHESHIRE LINES COMMITTEE, G.W., L. & N.E. and L.M. & S.	LITTLEWOOD'S MAIL ORDER STORES (LTD.), Liverpool	Per ton Furniture and household requisites	Edge Hill Goods Station, Liverpool. Railway Clearing House, London.

## South Indian Railway Company Limited.

THE Directors are prepared to receive Tenders for the supply of:

1. MOIST WHITE ZINC PAINT.
2. COPPER RODS, TUBES, BRASS RODS AND SHEETS, &c.,
3. STEEL BARS, SECTIONS, &c., AND BEST YORKSHIRE IRON.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.

Tenders, addressed to the Chairman and Directors of the South Indian Railway Co. Ltd., marked "Tender for Moist White Zinc Paint," or as the case may be, with the name of the firm tendering, must be left with the undersigned not later than 10 a.m. on Friday, the 12th January, 1934, in respect of Specifications Nos. 1 and 2 and not later than 12 noon on Friday, the 19th January, 1934, in respect of Specification No. 3.

The Directors do not bind themselves to accept the lowest or any Tender.

A charge, which will not be returned, will be made of 5s. for each copy of each Specification.

A. MUIRHEAD.

Managing Director.

91, Petty France,  
Westminster, S.W.1.  
3rd January, 1934.

PATENTS for Inventions, Trade Marks, Advice, Handbook, and consultations free. King's Patent Agency, Ltd. (B. T. King, C.I.M.E., Registered Patent Agent, G.B., U.S., and Canada), 146a, Queen Victoria Street, London, E.C.4. 47 years' references. 'Phone Central 0682.

## OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to: *The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

THE INNER CIRCLE SERVICE.—Kensington Borough Council has received a letter from the Parliamentary Officer of the London Passenger Transport Board with reference to the proposed future working of the Inner Circle. The letter states that it is the intention of the Board to modify the existing statutory provisions relating to the continuous working of the Inner Circle, and adds "The public complain of the delays at South Kensington and Aldgate. Circle trains have to be interlaced with a service of 40 trains per hour on the north side of the Circle and 40 trains per hour on the south side. To ensure that the Circle trains fit into their proper places, an interval has to be allowed at South Kensington and Aldgate. The delays are unavoidable under the present conditions. The scheme which the Board has in mind is to arrange interchange facilities at South Kensington and Aldgate. These facilities will involve the minimum of inconvenience to the passengers but will enable a more frequent and faster service of trains to and from all points, including the stations on the Inner Circle. The Board desires to be relieved of hampering provisions designed to meet conditions of 50 years ago, but which are inapplicable to modern conditions."

## Railway Share Market

The stock and share markets re-opened on Tuesday after the usual New Year holiday with a firmness which encouraged optimistic views of business in the ensuing year. Home railway ordinary stocks which had risen strongly before the holiday, were inclined to recede on some profit-taking. Traffic receipts for the final week of the year, issued on Wednesday, do not alter the dividend prospects of the companies for 1933 in any respect but they served to indicate the encouraging trend of traffic receipts already shown in the last two months. Great Western ordinary stock is the only undivided stock of this class on which a dividend is expected and the 3 per cent. which the Stock Exchange is estimating is expected to be paid out of the reserves.

The most interesting position is considered to attach to the junior stocks of the London & North Eastern Railway, whose traffic receipts are responding in a highly encouraging way to the reports of

greater trade activity in the north-eastern industrial areas. The whole investment outlook, however, for the junior stocks of the four big railway groups is regarded as based on the long view and brokerage firms are warning their clients, in buying the ordinary and preferred ordinary and some of the junior preference stocks of the companies, to disregard optimistic estimates of dividends which have appeared in some quarters. The prior charge stocks maintained firm prices this week and it is evident that the higher interest yield obtainable from home railway debenture stocks is attracting some investors from the Consols market. A limited amount of London & North Eastern 5 per cent. redeemable debenture stock is available just now at 112 at which the yield is £4 10s. per cent., excluding loss on redemption, but as this does not take place until 1947 the net yield is still an attractive one. A quantity of the same company's 3 per cent. debenture stock is obtainable at 78½ "ex" the half-year's interest and

the yield works out at £3 16s. 6d. per cent. L.M.S. 4 per cent. debenture stock is obtainable at 105½ "ex" dividend to give a yield of £3 15s. 6d. per cent. A moderate amount of Southern 5 per cent. guaranteed stock is also available at 116 and, excluding redemption in 1957, the yield is £4 6s. 3d. per cent.

In the foreign railway market there has been a marking up of prices of the debenture stocks of the Argentine railways and the various share issues of the Entre Rios Railways were advanced. Dorada 6 per cent. first mortgage debenture stock was raised five points to 75-85 but no business was recorded at the higher price. The last business was at 76½ on November 20. Weakness was shown by the International of Central America issues. The preference shares were marked down three points to 7-12 and the 6 per cent. dividend notes by 10 points to 30-40, business having taken place in the latter at the end of December at 36. Canadian Pacific shares were purchased on the long view.

### Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways.	Miles open 1933-34.	Week Ending	Traffic for Week.		No. of Week.	Aggregate Traffic to Date.			Shares or Stock.	Prices					
			Total this year	Inc. or Dec. compared with 1933		Totals.		Increase or Decrease.		Highest 1933.	Lowest 1933.	Jan. 3, 1934.	Yield % (See Note.)		
						This Year.	Last Year.								
South & Central America.															
Antofagasta (Chili) & Bolivia	830	31.12.33	£ 11,400	+	£ 1,370	52	£ 576,010	£ 539,330	+	£ 36,680	Ord. Stk.	26	11½	21	Nil
Argentine North Eastern ..	753	30.12.33	9,100	+	100	26	268,200	306,400	+	38,200	14½	5	9½	8	Nil
Argentine Transandine ..	111	30.12.33	780	—	270	26	27,310	3,160	+	24,150	A. Deb.	55	40	50½	Nil
Bolivar .. ..	170	Nov., 1933	5,300	—	800	47	67,350	82,750	—	15,400	6 p.c. Db.	10	5	10	Nil
Brazil .. ..	—	—	—	—	—	—	—	—	—	—	Bonds.	15	11	11½	45½
Buenos Ayres & Pacific ..	2,806	30.12.33	105,000	—	15,000	26	2,416,000	2,576,000	—	160,000	Ord. Stk.	26	97½	14	Nil
Buenos Ayres Central ..	190	24.12.33	10,565	+	1,246	26	265,378	244,210	+	21,168	Mt. Db.	30	10	22½	Nil
Buenos Ayres Gt. Southern	5,075	30.12.33	230,000	—	25,000	26	4,630,000	4,434,000	+	196,000	Ord. Stk.	44½	21½	31½	Nil
Buenos Ayres Western ..	1,926	30.12.33	65,000	—	5,000	26	1,569,000	1,625,000	—	56,000	"	34½	15½	24½	Nil
Central Argentine ..	3,700	30.12.33	175,000	—	23,000	26	4,048,000	4,844,000	—	786,000	"	28½	15	19	Nil
Do. .. ..	—	—	—	—	—	—	—	—	—	—	Divd.	18	10	12½	Nil
Cent. Uruguay of M. Video	273	30.12.33	17,560	+	1,157	26	419,956	399,805	+	20,151	Ord. Stk.	20	8	11½	Nil
Do. Eastern Extn. ..	311	30.12.33	3,157	—	392	26	80,177	82,908	—	2,731	"	—	—	—	—
Do. Northern Extn. ..	185	30.12.33	1,693	—	544	26	45,080	48,711	—	3,631	"	—	—	—	—
Do. Western Extn. ..	211	30.12.33	2,004	—	581	26	38,115	37,192	+	923	"	—	—	—	—
Cordoba Central .. ..	1,218	30.12.33	39,000	+	2,000	26	1,138,000	1,152,000	—	14,000	Ord. Inc.	94	2½	5	Nil
Costa Rica .. ..	188	Sept., 1933	18,332	—	944	13	64,775	67,775	—	3,000	Stk.	29	20	24½	8½
Dorada .. ..	70	Nov., 1933	7,400	—	100	47	85,800	75,200	+	10,600	1 Mt. Db.	76½	68½	80	7½
Entre Rios .. ..	810	30.12.33	19,000	+	2,400	26	397,500	427,200	—	29,700	Ord. Stk.	26½	9	16½	Nil
Great Western of Brazil ..	1,072	30.12.33	10,100	—	4,400	52	532,600	575,800	—	43,200	Ord. Sh.	23½	1½	34	Nil
International of Cl. Amer.	794	Nov., 1933	347,691	—	91,368	47	4,125,768	4,581,088	—	455,320	"	—	—	—	—
Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	—	—	1st Pref.	1½	1½	1½	Nil
La Guaira & Caracas ..	223½	Nov., 1933	2,500	—	3,680	47	52,270	80,115	—	27,845	Stk.	16	10	12½	Nil
Leopoldina .. ..	1,918	30.12.33	19,753	—	16,147	52	1,283,024	1,586,497	—	30,473	Ord. Stk.	204	10	12½	Nil
Mexican .. ..	483	21.12.33	\$204,700	+	\$31,100	24	\$4,638,400	\$9,984,700	+	\$643,700	"	3	1½	2½	Nil
Midland of Uruguay ..	319	Nov., 1933	11,172	+	1,273	21	45,688	42,767	+	2,921	Ord. Stk.	2	1	2	Nil
Nitrate .. ..	407	31.12.33	11,888	+	9,053	52	147,158	44,603	+	102,555	Ord. Sh.	78 6	11½	3½	Nil
Paraguay Central .. ..	274	30.12.33	2,610	+	240	26	85,560	73,960	+	11,600	Pr. Li. Stk.	72	49½	69	81½
Peruvian Corporation ..	1,059	Nov., 1933	58,072	+	7,790	21	274,940	283,505	—	8,565	Pref.	15¼	5	9	Nil
Salvador .. ..	100	16.12.33	790	—	1,637	25	22,746	42,219	—	19,473	Pr. Li. Db.	70	66½	70	7½
San Paulo .. ..	153½	24.12.33	34,759	—	6,350	51	1,546,254	1,465,422	—	80,832	Ord. Stk.	102	68	81½	27½
Taltal .. ..	164	Nov., 1933	4,500	+	2,325	21	22,150	7,055	+	15,095	Ord. Sh.	1¼	¾	1½	61½
United of Havana .. ..	1,367	30.12.33	14,458	+	2,295	26	340,928	373,265	—	32,337	Ord. Stk.	8	2½	4	Nil
Uruguay Northern .. ..	73	Nov., 1933	1,654	—	864	21	6,085	7,911	—	1,826	Deb. Stk.	6	3½	5	Nil
Canada.															
Canadian National .. ..	23,758	21.12.33	563,450	+	21,381	50	28,959,701	31,509,083	—	2,549,382	—	—	—	—	—
Canadian Northern .. ..	—	—	—	—	—	—	—	—	—	—	Perp. Dbs.	60½	38	53½	7½
Grand Trunk .. ..	—	—	—	—	—	—	—	—	—	—	4 p.c. Gar.	98½	85	98½	41½
Canadian Pacific .. ..	17,024	21.12.33	455,400	+	7,000	50	22,269,800	24,232,200	—	1,962,400	Ord. Stk.	22½	11	13	Nil
India & Far East.															
Assam Bengal .. ..	1,329	2.12.33	25,582	—	1,014	35	819,085	839,420	—	20,335	Ord. Stk.	79	70	71½	45½
Baru Light .. ..	202	9.12.33	2,317	—	570	36	105,615	94,282	+	11,333	Ord. Sh.	101½	70	98½	61½
Bengal & North Western ..	2,112	9.12.33	50,583	—	326	10	452,360	428,170	+	24,196	Ord. Stk.	292	240	292	5½
Bengal Dooars & Extension	161	9.12.33	2,804	—	36	36	108,381	110,796	—	2,415	"	127	119	125	5½
Bengal-Nagpur .. ..	3,269	25.11.33	106,800	—	1,866	34	3,407,184	3,244,581	+	162,603	"	97¼	83½	96½	41½
Bombay, Baroda & C. India	3,089	23.12.33	159,300	—	900	38	5,486,475	5,356,425	+	130,050	"	112	107	110½	57½
Madras & South'n Maharratta	3,230	9.12.33	107,250	—	3,299	36	3,884,983	3,671,371	+	213,612	"	127	114¼	122½	76½
Rohilkund & Kumaon ..	546	9.12.33	9,878	+	1,363	10	78,764	72,361	+	6,403	"	260	225	260	5½
South India .. ..	2,526	2.12.33	79,637	—	9,059	35	2,773,593	2,801,344	—	27,751	"	119½	112	116½	67½
Various.															
Beira-Umtali .. ..	204	Oct., 1933	49,929	+	7,388	4	49,929	42,541	+	7,388	—	—	—	—	—
Bilbao River & Cantabrian	15	Nov., 1933	2,583	—	326	47	17,992	20,613	—	2,621	—	—	—	—	—
Egyptian Delta .. ..	621	30.11.33	9,258	—	508	35	149,735	167,523	—	17,788	Prf. Sh.	151½	154	2	Nil
Great Southern of Spain ..	134	23.12.33	2,855	—	1,424	51	114,213	111,267	—	2,946	Inc. Deb.	4	3	5½	Nil
Kenya & Uganda .. ..	1,625	Aug., 1933	159,746	—	12,456	35	1,523,550	1,273,216	+	250,334	—	—	—	—	—
Manila .. ..	913	Oct., 1933	94,573	+	32,573	4	94,573	62,000	+	32,573	B. Deb.	53	33½	36½	99½
Mashonaland .. ..	277	Nov., 1933	12,568	—	412	21	65,111	61,532	—	3,579	1 Mg. Db.	91½	42	93½	59½
Midland of W. Australia ..	1,903	18.11.33	71,975	—	8,833	34	843,351	904,863	—	61,512	Inc. Deb.	89	70	89½	41½
Nigerian .. ..	1,538	Oct., 1933	160,562	+	52,214	4	160,562	108,348	+	52,214	4 p.c. Db.	98½	80½	98	41½
South African .. ..	13,151	2.12.33	485,970	—	50,608	36	15,773,381	13,600,319	+	2,173,062	—	—	—	—	—
Victorian .. ..	6,172	Oct., 1933	762,659	—	44,068	17	2,797,539	2,885,003	—	87,464	—	—	—	—	—
Zafra & Huelva .. ..	112	Nov., 1933	10,926	+	149	47	123,826	120,955	+	2,871	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1%.

† Receipts are calculated @ 1s. 6d. to the rupee. ‡ ex dividend. § Average rate of exchange for the week:—This year 35½s. Last year 42½s. 6d.



